

# **ENVIRONMENTAL ASSESSMENT**

## **Cooperative Gypsy Moth Project For Northern Indiana 2009**

**By**

**Indiana Department of Natural Resources  
Division of Entomology & Plant Pathology**

**Indiana Department of Natural Resources  
Division of Forestry**

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## 1.0 PURPOSE AND NEED FOR ACTION

### 1.1 Proposed Action

The Indiana Department of Natural Resources (IDNR), Division of Entomology & Plant Pathology and Division of Forestry, proposes a cooperative project with the United States Department of Agriculture (USDA), Forest Service (USFS) to treat the gypsy moth populations at 12 sites in 3 counties that cover an estimated 42,707 acres (Table 1 below and maps in Appendix B). The preferred alternative for the cooperative project is Alternative 5: Btk, mating disruption and/or mass trapping.

The IDNR is conducting a state-funded project to treat two sites by ground application using Dimilin. This action is not part of the cooperative project, but it is included as an appendix in this document (Appendix E).

Table 1. Number of Treatment Sites and Acres by County and Treatment Method for 2009.

COUNTY	TREATMENT SITES By Treatment Method			TREATMENT ACRES By Treatment Method		
	Mating Disruption	Btk Aerial	Ground Treatment **	Mating Disruption	Btk Aerial	Ground Treatment **
Allen	0	8	0	0	9493	0
Kosciusko	2	0	0	31230	0	0
LaPorte	0	2	2	0	1984	<2
Cooperative Project by Treatment	2	10	0	31230	11477	0
Total Cooperative Project	12			42707		
State Project by Treatment	0	0	2	0	0	<2

\*\*Ground treatments are not part of the cooperative project (Appendix E).

### 1.2 Project Objective

The objective for this cooperative project is to slow the spread of gypsy moth by eliminating reproducing populations from the proposed treatment sites. Over the past 4 years in Indiana, this objective has been successfully met, while implementing the Slow The Spread Program (STS) [see Tobin & Blackburn (2007) and Gypsy Moth Slow The Spread Foundation, Inc., <http://www.gmsts.org>].

### **1.3 Need for Action**

Gypsy moth is not native to the United States, and it lacks effective natural controls. The caterpillars feed on the foliage of many host plants. Oaks are the preferred host species, but the caterpillars defoliate many species of trees and shrubs when oaks are not available. When high numbers of gypsy moth caterpillars are present, forests and trees suffer severe defoliation, which can result in reduced tree growth, branch dieback and even tree mortality. The high numbers of caterpillars also create a substantial public nuisance and can affect human health.

The State of Indiana, with the IDNR, Division of Entomology and Plant Pathology as the lead agency, is dedicated to preserving urban and rural forested habitats from damage by gypsy moth and to enforcing interstate and intrastate quarantines to further protect areas not currently infested by this pest. If no action is taken, gypsy moth will increase and spread and defoliation will occur sooner. Therefore, the "no action" alternative is not preferred due to state officials desire to eliminate the isolated infestations, prevent human discomfort associated with infestations, delay damage to local plant communities and reduce spread to adjacent non-infested areas. Through public involvement, the majority of participating citizens supported the proposed action (Appendix A).

### **1.4 Decisions to be Made and Responsible Officials**

The preferred alternative in this document proposes cooperative participation of the IDNR and the USFS in treatment of gypsy moth populations in Indiana. The decision to be made by the responsible USFS official is to choose which of the alternatives presented in this document best fulfills the objectives of the proposed action, and thus the needs of the people of Indiana. In addition, the decision will have to be made as to whether or not any perceived significant environmental impacts could result from the implementation of this project. If there are none, this will be documented in a Decision Notice and FONSI (Finding of No Significant Impact). If significant environmental impacts are found and the project is to continue, an Environmental Impact Statement (EIS) would be prepared.

The alternatives analyzed for this environmental assessment are: 1) No cooperative project (No action), 2) Btk, 3) Mating disruption, 4) Mass trapping, 5) Btk, mating disruption and mass trapping (Preferred Alternative).

The responsible USFS official who will make this decision is:

Michael Prouty, Field Representative, USDA, Forest Service, Northeastern Area, 1992 Folwell Avenue, St. Paul, MN 55108, (651)-649-5276.

The responsible officials for the implementation of the cooperative project in the Indiana IDNR are:

Philip Marshall, State Entomologist, Indiana Department of Natural Resources, Division of Entomology and Plant Pathology, 402 West Washington Street, IGC South, Room W290, Indianapolis, IN 46204, (317) 232-4120.

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## **1.5 Scope of the Analysis**

A final environmental impact statement (FEIS), developed by the USDA, Animal & Plant Health Inspection Service (APHIS) and USFS, entitled Gypsy Moth Management in the United States: a cooperative approach (USDA 1995) was made available in November 1995. The Record of Decision for the FEIS was signed in January of 1996 (USDA 1996), and Alternative 6 was selected, which includes all three management strategies analyzed – suppression, eradication, and slow-the-spread. These strategies depend upon the infestation status of the area: generally infested, uninfested, and transition. Implementation of the FEIS preferred alternative requires that a site-specific environmental analysis be conducted to address local issues before federal or cooperative projects are conducted. This site-specific analysis is tiered to the programmatic environmental impact statement (USDA 1995). As part of the analyses conducted for the FEIS, human health and ecological risk assessments were prepared (Human Health Risk Assessment, Appendix F to the FEIS and Ecological Risk Assessment, Appendix G to the FEIS). The purpose of tiering is to eliminate repetitive discussions of the issues addressed in the FEIS (40 CFR, 1502.20 and 1508.28 in Council on Environmental Quality, 1992).

This environmental assessment provides a site-specific analysis of the alternatives and environmental impacts of treating gypsy moth populations for the Transition Area in northern Indiana.

## **1.6 Summary of Public Involvement and Notification**

Public meetings were held during January of 2009 (Appendix A). Letters of notice were delivered to elected officials, interested groups, residents and local media. At each meeting, state officials presented alternatives for gypsy moth management. The discussion included identification and biology of gypsy moth, pest impacts, survey methods, and control tactics. The proposed actions and alternatives, including no action, were discussed. Local issues, questions and concerns raised at the public meetings and in subsequent phone calls, letters and emails are included in Appendix A.

Information gathered from the public and from resource professionals was used to develop issues and concerns related to the project. They are grouped into two categories; 1) issues used to formulate alternatives, and 2) other issues and concerns.

## **1.7 Issues Used to Formulate the Alternatives**

Each of the major issues is introduced in this section. Discussion pertaining directly to each issue as it relates to the alternatives can be found in Chapter 4.

**Issue 1 - Human Health and Safety.** Three types of risk are addressed under this issue: 1) an aircraft accident during applications, 2) treatment materials and potential effects on people, and 3) the future effects of gypsy moth infestations on people.

**Issue 2 - Effects on Nontarget Organisms and Environmental Quality.** The major concerns under this issue are: 1) the impact of treatment materials to nontarget organisms, including threatened and endangered species that may be in the treatment sites, and 2) the future impacts of gypsy moth defoliation on the forest resources, water quality, wildlife and other natural resources.

**Issue 3 - Economic and Political Impacts of Treatment vs. Non-Treatment.** Gypsy moth outbreaks can have significant economic impacts due to effects on the timber resource, nursery and Christmas tree producers, and recreational activities. An additional economic impact is a gypsy moth quarantine imposed to regulate movement of products from the forest, nursery and recreational industries to uninfested areas.

**Issue 4 - Likelihood of Success of the Project.** The objective of this project is reducing the spread rate of gypsy moth within Indiana. Alternatives vary in their likelihood of success for the current situation in Indiana. Measurement of project success is important for delaying gypsy moth impacts to Indiana and neighboring states.

## **1.8 Other Concerns and Questions**

Concerns and questions were discussed during the public meetings (see Appendix A). Also, other agencies were consulted (see Appendix C). Information from these sources was used to develop management guidelines, treatment constraints, and mitigating measures.

## **1.9 Summary of Authorizing Laws and Policies**

**State.** The Division Director (State Entomologist) may cooperate with a person in Indiana to locate, check, or eradicate a pest or pathogen (Indiana Code 14-24-2-1). The Division Director may, on the behalf of the department, enter into a cooperative agreement with the United States government, the government of another state, or an agency of the United States or another state to carry out this article (Indiana Code 14-24-2-2). Aerial applicators must meet Indiana Pesticide Use and Application Law (Indiana Code 15-3-3.6) to provide safe, efficient and acceptable applications of pesticides. The Non-Game and Endangered Species Conservation law (Indiana Code 14-22-34) applies to this project.

**Federal.** Authorization to conduct treatments for gypsy moth infestations is given in the Plant Protection Act of 2000 (7 U.S.C. section 7701 et.seq.).

The Cooperative Forestry Assistance Act of 1978 provides the authority for the USDA and state cooperation in management of forest insects and diseases. The law recognizes that the nation's capacity to produce renewable forest resources is significantly dependent on non-federal forestland. The 2008 Farm Bill (P.L. 110-246) reauthorizes the basic charter of the Cooperative Forestry Assistance Act of 1978.

The National Environmental Policy Act (NEPA) of 1969 (P.L. 91-190), 42 USC 4321 et. seq. requires a detailed environmental analysis of any proposed federal action that may affect the human environment. The courts regard federally funded state actions as federal actions.

The Federal Insecticide, Fungicide and Rodenticide Act of 1947, (7 USC 136) as amended, known as FIFRA, requires insecticides used within the United States be registered by the United States Environmental Protection Agency (EPA).

Section 7 of the Endangered Species Act prohibits federal actions from jeopardizing the continued existence of federally listed threatened or endangered species or adversely affecting critical habitat of such species.

Section 106 of the National Historical Preservation Act and 36 CFR Part 800: Protection of Historic Properties requires the State Historic Preservation Officer be consulted regarding the proposed activities.

USDA Departmental Gypsy Moth Policy (USDA 1990) assigns the USFS and APHIS responsibility to assist states in protecting non-federal lands from gypsy moth damage.

## 2.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION

### 2.1 Process Used to Formulate the Alternatives

Staff entomologists and administration within the IDNR, Division of Entomology and Plant Pathology and the Division of Forestry in cooperation with USDA Forest Service, formulated several alternatives to treat the gypsy moth populations in Indiana under the slow-the-spread strategies (See Chapter 6, Persons and Agencies Consulted).

The FEIS (USDA 1995), which this document is tiered to, allows the USDA to participate in the Cooperative Gypsy Moth Project for Indiana. The USDA can assist in conducting eradication, slow-the-spread and suppression strategies. The FEIS lists the treatment options for each of the strategies (USDA 1995, Vol. II, p.2-15). For the slow-the-spread strategy, the following six treatment options may be considered: 1) *Bacillus thuringiensis* var. *kurstaki* (Btk), 2) diflubenzuron (Dimilin), 3) nucleopolyhedrosis virus (Gypchek), 4) mass trapping, 5) mating disruption (pheromone flakes), and 6) sterile insect release. These treatment options from the FEIS were used as the alternatives for the site-specific analysis of this Environmental Assessment.

### 2.2 Alternatives Eliminated from Detailed Study

The following alternatives that are available were eliminated from consideration:

**Diflubenzuron (Dimilin).** The label for diflubenzuron (Dimilin) prohibits its use over wetlands and directly to water. Many treatment sites contain ponds, lakes, marsh, rivers and/or wetlands. Therefore, its use was not considered for this project. This does not preclude the consideration and use of Dimilin in future projects.

**Gypsy moth specific nucleopolyhedrosis virus (Gypchek).** Gypsy moth nucleopolyhedrosis virus (Gypchek) has a very limited supply and is targeted for use in special areas that have high environmental concerns (e.g., treatment sites that have threatened or endangered species, which could be impacted by other treatment options). There are limited data on the effectiveness of Gypchek in low-level gypsy moth populations. It is preferably used in suppression projects against moderate to high gypsy moth populations (USDA 1995, Vol. II, p. A7). Therefore, NPV is not considered for this project. In future projects, it will be evaluated for use.

**Sterile insect release.** The FEIS documents the use of sterile insects for elimination of isolated gypsy moth populations. It also documents the obstacles of using this alternative - the limited release period; need to synchronize production of sterile pupae and release into the population; and the limited availability. This treatment alternative is currently not available, and it has not been used in recent eradication or slow-the-spread treatment projects. Giving consideration to these obstacles, this alternative was not considered for this project. In future projects, it will be evaluated for use.



## 2.3 Alternatives Considered in Detail

**Alternative 1 - No action.** If no action is taken, the gypsy moth will reproduce and populations will begin to defoliate trees in the area. Gypsy moth populations will develop and spread to surrounding areas. This is not a preferred alternative because damage and regulatory action will occur sooner than if other alternatives are selected.

**Alternative 2 - Btk.** This treatment option uses one or two applications of Btk at 24 to 38 billion international units (BIU) per acre applied from air or ground. The applications would begin when leaf expansion is near 50% and when first and second instar caterpillars are present and feeding. This usually occurs between late April and late May in northern Indiana. The second application would follow no sooner than four days after the first application. Most commercial formulations of Btk are aqueous flowable suspension containing 48 or 76 BIU/gal. (Appendix D – example of product label). For aerial application at 24 to 38 BIU, less than 3.0 quarts of the product would be applied per acre.

Btk has been a commonly used treatment option in Cooperative Gypsy Moth Projects in Indiana and other states. Btk is a naturally occurring soil-borne bacterium that is mass-produced and formulated into a commercial insecticide. The Btk strain is effective against caterpillars, including the gypsy moth caterpillar. Caterpillars ingest Btk while eating the foliage. Once in the midgut, Btk becomes active and causes death within a few hours or days (USDA 1995, Vol. II, p. A3-A5). Btk may impact nontarget species of spring-feeding caterpillars in the treatment sites, but the impact to the local population is usually very minimal as Btk rapidly degrades on the foliage within a few weeks, and the nontarget lepidopterans generally re-colonize treatment sites in less than 2 years (USDA 1995, Vol. II, p. 4-52 to 4-55). Human exposure to Btk provides little cause for concern, though direct exposure to the spray may cause temporary eye and respiratory tract irritation in a few people (USDA 1995, Vol. II, p. 4-13).

Btk has proven effective at eliminating gypsy moth at all population levels. Btk applications can meet the project objective of eliminating gypsy moth populations from all of the proposed treatment sites.

**Alternative 3 - Mating disruption.** This treatment option uses one aerial application of pheromone flakes prior to the emergence of male moths. This would occur in mid-June to early July. Mating disruption relies on the attractive characteristics of the gypsy moth sex pheromone, disparlure. The objective of mating disruption is to saturate the treatment area with enough pheromone sources to confuse the male moths and prevent them from finding and mating with female moths. Mating disruption is considered specific to gypsy moth and is not known to cause impacts to nontarget organism populations, water quality, microclimate, or soil productivity and fertility (USDA 1995, Vol. II, p. 4-67).

Mating disruption involves the aerial application of plastic flake dispensers that are impregnated with the gypsy moth pheromone. The formulation of Disrupt II (see Appendix D – example of product labels) consists of small plastic flakes, approximately 1/32 inch x 3/32 inch (1 x 3 mm) in size, thus the name “pheromone flakes”. A sticker, Monsanto's Gelva 2333, is applied to the flakes as they are dispersed from the aircraft, which aids in the distribution of the flakes

throughout all levels in the forest canopy where mating could potentially occur. The flakes are green in color and applied at a rate of 6 or 15 grams active ingredient (disparlure) per acre. At the high rate of 15 grams, 85 grams of flakes are applied in 2 fluid ounces of sticker per acre (2 flakes per sq.ft.) (Thorpe et al. 2006). All of the ingredients in the Gelva 2333 sticker are considered non-hazardous to public health if used as an additive in the insecticide formulation (40 CFR 180.1001).

Pheromone flakes have proven effective at eliminating gypsy moth at very low population levels. The application of pheromone flakes can meet the project objective of eliminating gypsy moth populations from two of the proposed treatment sites.

**Alternative 4 - Mass trapping.** This treatment option places gypsy moth traps at a close spacing within the treatment sites. “The objective of this treatment is to capture male gypsy moths before they have a chance to locate and mate with female moths” (USDA 1995, Vol. II, p. A-7). “For mass trapping, delta or milk carton traps are deployed in an intensive grid pattern in an infested area and an adjacent buffer area at the rate of at least 9 traps per acre” (USDA 1995, Vol. II, p. A-8). Thus, it is very labor intensive, especially over large areas. Typically, mass trapping is used on small infestations of less than 40 acres.

Mass trapping has proven capable of eradicating gypsy moth at very low population levels in isolated introductions. The use of mass trapping can meet the project objective of eliminating gypsy moth populations from two of the proposed treatment sites.

**Alternative 5 - Btk, Mating disruption and Mass trapping (Preferred Alternative).** The use of this alternative provides flexibility to select Btk, mating disruption, or mass trapping alone or in combination for each site based on the following criteria: 1) gypsy moth population level, 2) habitat type (urban, rural, open water or wetland), 3) nontarget organisms, 4) safety and 5) cost and project efficiency. The use of this alternative can meet the objective of eliminating gypsy moth populations from all of the proposed treatment sites.

## 2.4 Comparative Summary of Alternatives

Table 2. Summary of Environmental Consequences for Alternatives by Issues from Chapter 4.

	<b>Issue 1</b> Human Health & Safety (pgs. 14-15)	<b>Issue 2</b> Effects on Nontarget Organisms & Environmental Quality (pgs. 15-17)	<b>Issue 3</b> Economic and Political Impacts (pgs. 17-18)	<b>Issue 4</b> Likelihood of Success of the Project (pgs. 18-19)
<b>Alternative 1</b> No action	<ul style="list-style-type: none"> <li>- No risk of an aircraft accident or spill.</li> <li>- No risk of Btk contact with humans.</li> <li>- Gypsy moth outbreaks will occur sooner with the associated nuisance and health impacts to humans.</li> </ul>	<ul style="list-style-type: none"> <li>- No direct effect to nontarget organisms, including threatened and endangered species.</li> <li>- Future gypsy moth impacts will occur sooner, which includes defoliation and reduction in the oak component of forest stands.</li> </ul>	<ul style="list-style-type: none"> <li>- Regulatory action would occur sooner.</li> <li>- Spread of gypsy moth through these counties and into adjacent counties would not be slowed.</li> <li>- Suppression projects and negative financial impacts from defoliation would occur sooner.</li> </ul>	<ul style="list-style-type: none"> <li>- Gypsy moth would not be eliminated from treatment sites and project objective would not be met.</li> </ul>
<b>Alternative 2</b> Btk	<ul style="list-style-type: none"> <li>- Slight risk of aircraft accident and pesticide spill.</li> <li>- Contact with Btk may cause mild and temporary irritation (eye, skin &amp; respiratory) to a few people.</li> <li>- Delay effect of gypsy moth outbreaks on humans.</li> </ul>	<ul style="list-style-type: none"> <li>- Direct impact on spring feeding caterpillars, temporary reduction in local populations.</li> <li>- Unlikely effect on Karner blue butterfly and Mitchell's satyr as neither species occur within or adjacent to treatment sites.</li> <li>- Adverse effect on Indiana bat, clubshell mussel and copperbelly water snake is unlikely.</li> <li>- Delay the impact of gypsy moth defoliation on environmental quality.</li> </ul>	<ul style="list-style-type: none"> <li>- Regulatory action would not be implemented in these counties during the current year.</li> <li>- Slows the spread of gypsy moth.</li> </ul>	<ul style="list-style-type: none"> <li>- Success is likely in the treatment sites.</li> </ul>
<b>Alternative 3</b> Mating disruption	<ul style="list-style-type: none"> <li>- Slight risk of aircraft accident.</li> <li>- No effect to human health.</li> <li>- Delay effect of gypsy moth outbreaks on humans.</li> </ul>	<ul style="list-style-type: none"> <li>- No effect to nontarget organisms, including threatened and endangered species.</li> <li>- Delay the impact of gypsy moth defoliation on environmental quality.</li> </ul>	<ul style="list-style-type: none"> <li>- Regulatory action would not be implemented in these counties during the current year.</li> <li>- Slows the spread of gypsy moth.</li> </ul>	<ul style="list-style-type: none"> <li>- Success is likely in the treatment sites with very low populations.</li> </ul>
<b>Alternative 4</b> Mass trapping	<ul style="list-style-type: none"> <li>- No risk of aircraft accident or spill.</li> <li>- No risk of Btk contact with humans</li> <li>- No effect to human health</li> <li>- Delay effects of gypsy moth outbreaks on humans.</li> </ul>	<ul style="list-style-type: none"> <li>- No effect to nontarget organisms including threatened and endangered species.</li> <li>- Delay the impact of gypsy moth defoliation on environmental quality.</li> </ul>	<ul style="list-style-type: none"> <li>- Regulatory action would not be implemented in these counties during the current year.</li> <li>- Slows the spread of gypsy moth.</li> <li>- Cost is prohibitive in large treatment sites.</li> </ul>	<ul style="list-style-type: none"> <li>- Success is likely in small treatment sites with very low populations.</li> </ul>
<b>Alternative 5</b> Btk, Mating disruption and mass trapping	<ul style="list-style-type: none"> <li>- Same as alternative 2, 3 or 4 depending on the treatment at each site.</li> </ul>	<ul style="list-style-type: none"> <li>- Same as alternative 2, 3 or 4 depending on the treatment at each site.</li> </ul>	<ul style="list-style-type: none"> <li>- Regulatory action would not be implemented in these counties during the current year.</li> <li>- Slows the spread of gypsy moth.</li> </ul>	<ul style="list-style-type: none"> <li>- Success is likely in the treatment sites.</li> </ul>

### **3.0 AFFECTED ENVIRONMENT**

#### **3.1 Description of the Proposed Treatment Sites**

**Allen County:** There are approximately 432,635 acres in Allen County and 59,276 acres of forest that contain both favorable and unfavorable host species.

**Arlington Park 09:** The proposed treatment site contains 3532 acres. The site is composed of trees associated with urban residences and woodlots. Oak, linden, maple, ash, cherry, crabapple, basswood, birch, locust, cottonwood, pine, spruce, and other hardwoods and shrubs are present. Several trees near the center of the site were defoliated during 2008. Houses, businesses, churches and schools occur within the site. Schools also occur adjacent to the site. There is a golf course in the northeast corner of the site. Mengerson Nature Preserve is located a quarter mile west of the proposed treatment site. Several retention ponds occur within the site. Two power lines run through the site and there are cell phone and radio towers within the site. The site was detected in 2006 and delimited in 2007 and 2008. A small part of the site was treated with mating disruption in 2006 and part of the site was treated with Btk in 2007 and 2008. Several egg masses were detected in this site in 2008. Survey indicates a low gypsy moth population, and Btk is proposed for this site.

**Crescent 09:** The proposed treatment site contains 196 acres. The site is composed of trees associated with urban residences and woodlots. Oak, hickory, maple, crabapple, ash, basswood, cottonwood, spruce, pine, and other hardwoods and shrubs are present. Houses, businesses, churches, schools and a city park occur within the site. There is a helipad at Parkview Hospital just south of the site. There are stadium lights and a cell phone tower within the site. The site was detected in 2004 and delimited in 2005, 2006 and 2007. Parts of the site were treated with Btk in 2005 to 2007 and with mating disruption treatment in 2006. Several egg masses were detected in this site in 2008. Survey indicates a low gypsy moth population, and Btk is proposed for this site.

**Lindenwood 09:** The proposed treatment site contains 507 acres. The site is composed of trees associated with urban residences and woodlots. Oak, hickory, maple, beech, elm, basswood, willow, tulip poplar, ash, cherry, sassafras, buckeye, hemlock, spruce, pine, and other hardwoods and shrubs are present. Houses, businesses, churches, schools, a city park, a cemetery and Lindenwood Nature Preserve occur within the site. There are radio, cell phone and television towers and a power line within the site. There is a tall building along Leesburg Road at the railroad tracks. There are shopping areas just southwest of the site. The site was detected in 2008 and has had no prior treatment. Several egg masses were detected in 2008. Survey indicates a low gypsy moth population, and Btk is proposed for this site.

**Memorial Park 09:** The proposed treatment site contains 337 acres. This site is composed of trees associated with urban residences and woodlots. Oak, hickory, maple, basswood, locust, ash, cottonwood, elm, crabapple, pine, spruce, hemlock, and other hardwoods and shrubs are present. Houses, businesses, churches, schools and a park

occur within the site. There are churches and schools adjacent to the site. The Fort Wayne Water Pollution Control Plant is north of the site and the Maumee River is north of the site. There are several radio, cell phone and water towers and one smokestack within the site. There is a power line and stadium lights within the site. This site was detected in 2007 and delimited in 2008. Part of the site was treated with Btk in 2008. Several egg masses were detected in this site in 2008. Survey indicates a low gypsy moth population, and Btk is proposed for this site.

**Papermill 09:** The proposed treatment site contains 278 acres. This site is composed of trees associated with urban residences and woodlots. Oak, ash, basswood, maple, cottonwood, elm, hickory, beech, crabapple, spruce, pine, and other hardwoods and shrubs are present. Houses and businesses occur within the site. There are schools, a church and a retirement townhouse community adjacent to the site. There is a cell phone tower and a sports complex with soccer fields just to the south of the site. This site was detected in 2006 and delimited in 2007. Part of the site was treated with mating disruption in 2007. Several egg masses were detected in this site in 2008. Survey indicates a low gypsy moth population, and Btk is proposed for this site.

**Smith Field 09:** The proposed treatment site contains 3594 acres. This site is composed of trees associated with urban residences and woodlots. Oak, maple, hickory, cottonwood, ash, elm, locust, crabapple, basswood, spruce, pine, and other hardwoods and shrubs are present. Several scattered trees across the site were defoliated during 2008. Houses, businesses, churches and schools occur within the site. Several churches and schools occur adjacent to the site. Several retention ponds occur within the site and Smith Field airport is within the site. There are several radio and cell phone towers and power lines within the site. There are large security lights and stadium lights within the site. This site was detected in 2006 and was delimited in 2007 and 2008. Part of the site was treated with mating disruption in 2007 and part of the site was treated with Btk in 2007 and 2008. Several egg masses were detected in this site in 2008. Survey indicates a low gypsy moth population, and Btk is proposed for this site.

**St. Joe 09:** The proposed treatment site contains 729 acres. This site is composed of trees associated with urban residences and woodlots. Oak, maple, hickory, birch, cottonwood, basswood, ash, locust, crabapple, spruce, pine, and other hardwoods and shrubs are present. Six trees had defoliation during 2008. Houses, businesses, a church and a school occur within the site. There is a school and several churches adjacent to the site. Mengerson Nature Preserves is approximately one third of a mile southwest of the proposed treatment site. There are several retention ponds within the site. There are two cell phone towers within the site. This site was detected in 2007 and delimited in 2008. Parts of the site were treated with Btk in 2008. Several egg masses were detected in this site in 2008. Survey indicates a low gypsy moth population, and Btk is proposed for this site.

**Vance Avenue 09:** The proposed treatment site contains 320 acres. This site is composed of trees associated with urban residences and woodlots. Oak, hickory, maple, basswood, ash, cottonwood, elm, spruce, pine, and other hardwoods and shrubs are

present. Houses and businesses occur within the site. Several churches and schools occur adjacent to the site. A city park occurs within the site. No aerial application hazards have been identified within the site. The site was detected in 2004 and delimited in 2005 and 2006. Parts of the site were treated with Btk in 2005 and 2006 and the entire site was treated with mating disruption in 2006. Several egg masses were detected in this site in 2008. Survey indicates a low gypsy moth population, and Btk is proposed for this site.

**Kosciusko County:** There are approximately 384,800 acres in Kosciusko County and 42,000 acres of forest that contain both favorable and unfavorable host species.

**Warsaw North 09:** The proposed treatment site contains 16,971 acres. This site is composed of trees associated with urban residences and woodlots. Oak, apple, cherry, ash, Kentucky coffeetree, sumac, hickory, white pine, and other hardwoods and shrubs are present. Houses, businesses, churches, and schools occur within the site. Several parks, recreational areas, lakes, ponds, and a wetlands area occur within the site. Several towers and a few power lines occur within the site. Warsaw airport is two miles north of the site and the Warsaw Hospital heliport is on the northern boundary of the site. The site was detected in 2008 and has had no prior treatment. No egg masses were detected in this site in 2008. Survey indicates a very low gypsy moth population, and mating disruption is proposed for this site.

**Warsaw South 09:** The proposed treatment site contains 14,259 acres. This site is composed of trees associated with rural residences and woodlots. Oak, apple, cherry, ash, Kentucky coffeetree, sumac, hickory, white pine, and other hardwoods and shrubs are present. Houses and farms occur within the site. Several lakes, ponds, drainage ditches and one wetlands area occur within the site. One tower occurs within the site and one tower occurs adjacent to the site. Warsaw airport is 5.5 miles north of the site and the Warsaw Hospital heliport is 4 miles north of the site. The site was detected in 2008 and has had no prior treatment. No egg masses were detected in this site in 2008. Survey indicates a very low gypsy moth population, and mating disruption is proposed for this site.

**LaPorte County:** There are approximately 401,015 acres in LaPorte County and 45,618 acres of forest that contain both favorable and unfavorable host species.

**Beatty Corner 09:** The proposed treatment site contains 695 acres. This site is composed of trees associated with rural residences and woodlots. Oak, maple and other hardwoods and shrubs are present. Houses occur within the site. Little Calumet Headwaters Nature Preserve is located approximately two miles south of the proposed treatment site. No aerial application hazards have been identified within the site. The site was detected in 2007 and delimited in 2008. Part of the site was treated with Btk in 2008. Egg masses were detected in this site in 2008. Survey indicates a low gypsy moth population, and Btk is proposed for this site.

**Lofgren 09:** The proposed treatment site contains 1289 acres. This site is composed of trees associated with rural residences and woodlots. Oak and maple and other hardwoods and shrubs are present. Houses and a church occur within the site. No aerial application hazards have been identified within the site. The site was detected in 2006 and delimited in 2007 and 2008. A localized part of the site was treated with Dimilin as a ground treatment in 2007 and part of the site was treated by air with Btk in 2008. Egg masses were detected in this site in 2008. Survey indicates a low gypsy moth population, and Btk is proposed for this site.

### 3.2 Threatened and Endangered Species

Consultation with the staff of the U.S. Fish and Wildlife Service determined that, “One of the proposed treatment methods, spraying with *Bacillus thuringiensis* (Bt), is of concern for 2 federally endangered species of Lepidoptera in Indiana, the Karner blue butterfly (*Lycaeides melissa samuelis*) and Mitchell’s satyr butterfly (*Neonympha mitchellii*). The known occurrences of these 2 endangered species are in the northern portions of Lake and Porter Counties (Karner blue butterfly), and isolated locations in LaPorte and LaGrange Counties (Mitchell’s satyr).” “Neither species is known to occur near any of the treatment sites identified in your letter. Treatment with Disrupt II pheromone flakes, which is considered to be highly specific for gypsy moths, is not known to have adverse impacts on the federally listed butterflies.”(Appendix C – Letter from U.S. Fish & Wildlife Service).

“The proposed treatment sites are within the range of the federally endangered Indiana bat (*Myotis sodalis*) (entire state) and the clubshell mussel (*Pleurobema clava*) (Kosciusko County), and the federally threatened copperbelly water snake (*Nerodia erythrogaster neglecta*) (Kosciusko County). In Kosciusko County the clubshell is found only in the Tippecanoe River and the copperbelly water snake records are from wetlands associated with natural lakes which are not near the treatment areas. Neither species is likely to be adversely affected by the proposal pheromone treatments.”(Appendix C – Letter from U.S. Fish & Wildlife Service).

“None of the proposed treatment areas are near Indiana bat hibernacula, and there are no summer records of Indiana bats near any of the Btk or Dimilin sites. Most of the 2009 Btk aerial treatment sites are limited to relatively small areas of Indiana bat habitat, with the exception of the Lindenwood 09 site in Allen County (an estimated 250 acre block of undisturbed forest) and the Beatty 09 site in LaPorte County (an estimated 200 acres of forest).” “The extent of the adverse effects of a loss of lepidopteran forage base on Indiana bats is uncertain, therefore at this time we consider the likelihood of take from the 2009 program to be discountably small. However, to minimize impacts on foraging Indiana bats we recommend that aerial spraying at those 2 sites be conducted as early as possible in the season...the FWS concludes that the federally assisted 2009 gypsy moth program is not likely to adversely affect any of these federally listed species.”(Appendix C – Letter from U.S. Fish & Wildlife Service).

The IDNR, Environmental Unit reviewed the project and determined, “At this time, no harm to state or federal listed species resulting from the proposed control measures is known or anticipated. The potential harm from the project is less than the potential harm to these same

species from an uncontrolled gypsy moth infestation.”(Appendix C – IDNR, Early Coordination/Environmental Assessment).

### **3.3 Protection of Historic Properties**

The State Historic Preservation Officer did not identify any historic properties that will be altered, demolished, or removed by the proposed project pursuant to Indiana Code 14-21-1-18. (Appendix C –Letter from IDNR, Division of Historic Preservation and Archaeology).

## **4.0 ENVIRONMENTAL CONSEQUENCES**

This section is the scientific and analytic basis for the comparison of alternatives. It describes the probable consequences (effects) of each alternative for each issue. Environmental consequences are summarized in Table 2 for each combination of the alternatives and issues.

### **4.1 Human Health and Safety (Issue 1).**

**Alternative 1 – No action.** For this alternative, there would be no cooperative project, therefore risk of human contact with pheromone flakes or Btk and an aircraft accident during application would not exist. However, future impacts by gypsy moth to human health will occur sooner under Alternative 1 than if treatments are used to slow-the-spread of these gypsy moth populations. Gypsy moth outbreaks have been associated with adverse human health effects, including skin lesions, eye irritation, and respiratory reactions. Gypsy moth caterpillars can become a serious nuisance that can cause psychological stress in some individuals (USDA 1995, Vol. II, p. 4-9).

**Alternative 2 - Btk.** Human exposure to Btk provides little cause for concern about health effects. “On the basis of both the available epidemiology studies as well as the long history of use, no hazard has been identified for members of the general public exposed to Btk formulations” (USDA 1995, Vol. III, p. 4-15). Exposure to Btk may result in temporary eye, skin, and respiratory tract irritation in a few people. A detailed analysis of the risks posed to humans by Btk was conducted for the FEIS -- Human Health Risk Assessment (USDA 1995, Vol. III). Glare and O’Callaghan provide a comprehensive review of *Bacillus thuringiensis*, including Btk. They conclude with this statement, “After covering this vast amount of literature, our view is a qualified verdict of safe to use.” (Glare and O’Callaghan, 2000)

A slight risk of an accident always exists when conducting aerial applications – Btk uses two applications. To further reduce this risk, a detailed work and safety plan is required prior to program implementation, which outlines guidelines for aircraft inspections, Btk loading, and conditions for safe applications.

The effect of gypsy moth outbreaks on humans would be delayed using this alternative.

**Alternative 3 – Mating disruption.** The toxicity of insect pheromones to mammals is relatively low and their activity is target-specific. Therefore the EPA requires less rigorous testing of these products than of conventional insecticides. Risk to human health due to exposure to disparlure,



the active ingredient in pheromone flakes, is discussed in the FEIS (USDA 1995, Vol. II, pp. 4-30 to 4-32). Once absorbed through direct contact, disparlure is very persistent in humans, and individuals exposed to disparlure may attract adult male moths for prolonged periods of time. This persistence is viewed as a nuisance and not a health risk (USDA 1995, Vol. III, 8-1). In acute toxicity tests, disparlure was not toxic to mammals, birds, or fish (USDA 1995, Vol. IV, 5-5) therefore no effects to human health are anticipated.

A slight risk of an accident always exists when conducting aerial applications – mating disruption uses one application. To further reduce this risk, a detailed work and safety plan is required prior to program implementation, which outlines guidelines for aircraft inspections, pheromone flake loading, and conditions for safe applications. The effect of gypsy moth outbreaks on humans would be delayed using this alternative.

**Alternative 4 – Mass trapping.** The effect of gypsy moth outbreaks on humans would be delayed using this alternative. The human health effects are not anticipated from the use of disparlure in the delta traps (see Alternative 3 above).

**Alternative 5 – Btk, Mating disruption, and Mass trapping.** The human health and safety consequences stated above for Alternatives 2, 3 and 4 apply to this alternative.

#### **4.2 Effects on Nontarget Organisms and Environmental Quality (Issue 2).**

**Alternative 1 – No action.** With no treatments in the current year, future impacts by the gypsy moth would occur sooner. Defoliation by the gypsy moth will cause selective mortality of preferred host trees. During outbreaks, forest ecosystems can change due to a reduction of the oak component and an increase of tree species that are less desired by gypsy moth, such as maple and ash. Oak forests would likely consist of a more mixed composition in the future; though oak would still be a component.

Gypsy moth defoliation and subsequent tree mortality can affect nontarget organisms by dramatically changing habitats on a local scale. Heavy defoliation can remove food for other leaf-feeding species, including other caterpillars. However, it can also create new habitat for some species by creating snags and increasing understory plant development by increasing light penetration into defoliated areas. Impacts on a larger scale (national, regional, or state) are subtle, gradual, and may be noticeable only after many years or decades (USDA 1995, Vol. II, p. 4-74). Short- and long-term changes in nontarget species have been shown for moderate and heavy defoliation (USDA 1995, Vol. II, p. 4-47 and 4-50). An Ecological Risk Assessment (USDA 1995, Vol. IV) examined gypsy moth impacts on a wide variety of species (mammals, birds, reptiles, amphibians, fish, insects, mollusks, crustaceans, and other invertebrates). Further discussion of gypsy moth and its impact on forest conditions can be found in the FEIS (USDA 1995, Vol. II, p. 4-41 and 4-74).

**Alternative 2 - Btk.** Btk can have direct and indirect effects on nontarget organisms. Direct toxicity of Btk is generally limited to the larval stage of moth and butterfly species. Btk is not toxic to vertebrates, honeybees, parasitic and predatory insects, and most aquatic invertebrates (USDA 1995, Vol. IV, p. 5-1). Btk has a direct adverse effect on caterpillars of moths and

butterflies, but susceptibility varies widely among species. Btk, as used in gypsy moth projects, poses a risk to some spring-feeding caterpillars; however, permanent changes in their populations do not appear likely. An exception may occur in certain habitats that support small isolated populations of a particular species of moth or butterfly that is highly susceptible to Btk (USDA 1995, Vol. II, p. 4-54). “The U.S. Fish and Wildlife Service identified two federally endangered butterflies - Karner blue butterfly (*Lycaeides melissa samuelis*) and the Mitchell’s satyr butterfly (*Neonympha mitchellii*). These species are not known to occur within or near to the sites proposed for treatment using Btk.” (Appendix C – Letter from U.S. Fish & Wildlife Service).

Btk may have an indirect effect on other organisms by a reduction in their food resource (e.g. caterpillars, pupae, or adult moths and butterflies). Any effects on vertebrates due to reduction in food availability are probably subtle, especially for mammals and birds that are very mobile. Populations of some gypsy moth parasites and some general lepidopteran parasites may be reduced, due to the reduction in number of potential hosts caused by the Btk spray (USDA 1995, Vol. IV, p. 5-7). The U.S. Fish and Wildlife letter identified that the treatment sites are within the range of the federally endangered Indiana bat (*Myotis sodalis*). “None of the proposed treatment areas are near Indiana bat hibernacula, and there are no summer records of Indiana bats near any of the Btk or Dimilin sites. Most of the 2009 Btk aerial treatment sites are limited to relatively small areas of Indiana bat habitat, with the exception of the Lindenwood 09 site in Allen County (an estimated 250 acre block of undisturbed forest) and the Beatty 09 site in LaPorte County (an estimated 200 acres of forest). The extent of the adverse effects of a loss of lepidopteran forage base on Indiana bats is uncertain, therefore at this time we consider the likelihood of take from the 2009 program to be discountably small. However, to minimize impacts on foraging Indiana bats we recommend that aerial spraying at those 2 sites be conducted as early as possible in the season.” Thus, the U.S. Fish & Wildlife Service concludes that the federally assisted 2009 gypsy moth program is not likely to adversely affect the Indiana bats. (Appendix C – Letter from U.S. Fish & Wildlife Service).

Applications of Btk formulations do not increase levels of Btk in soil, and Btk persists for a relatively short time in the environment. Changes in soil productivity and fertility are not likely in the treatment sites, because Btk occurs naturally in soils worldwide. Additional information concerning the effects to soil can be found in Appendix G of the FEIS (USDA 1995, Vol. IV).

Application of Btk is likely to maintain the forest condition in the short-term by eliminating gypsy moth populations in the treatment sites, thus delaying gypsy moth from expanding and causing defoliation. In the long-term, gypsy moth will become well established in these counties; even if this alternative is implemented.

**Alternative 3 – Mating disruption.** The pheromone in the flake dispenser is specific to gypsy moth, and it will not affect other insects, including any threatened and endangered species of butterflies or moths.

A quantitative assessment of risk from mating disruption was not conducted for the FEIS because of disparlure’s low toxicity to vertebrates and specificity to gypsy moth. As used in mating disruption, disparlure is not likely to impact nontarget organisms (USDA 1995, Vol. II, p.

4-67). The toxicity of insect pheromones to mammals is relatively low. In acute toxicity tests, disparlure was not toxic to mammals, birds, or fish (USDA 1995, Vol. IV, 5-5). At normal application rates, concentration of the pheromone (disparlure) impregnated in the flakes remains active for one season only. Therefore, no effects on nontarget organisms are anticipated from the proposed pheromone flake application.

Most ingredients in the flakes are insoluble in water, so the risk of disparlure leaching into groundwater is minimal. To determine the amount of disparlure that could potentially leach into water, 50 grams of flakes were submerged in 150 ml of water and vigorously agitated for 24 hours. Results indicate that less than 0.04% of the active ingredient (disparlure) contained in the flakes leached into water under these conditions. Disrupt II (product name for the pheromone flakes) is applied at doses of 6 or 15 grams of active ingredient (disparlure) per acre and 90% of the flakes are intercepted by and adhere to the forest canopy, where they remain until they have released most of the disparlure.

Using pheromone flakes to disrupt mating is likely to maintain the forest condition in the short-term by eliminating gypsy moth populations in the treatment sites, thus delaying gypsy moth from expanding and causing defoliation. In the long-term, gypsy moth will become well established in these counties; even if this alternative is implemented.

**Alternative 4 - Mass trapping.** The pheromone in the delta trap is specific to gypsy moth and will not have an effect on other insects or threatened and endangered species of butterflies or moths. “Mass trapping does not affect nontarget organisms, except those (primarily flying insects) that accidentally find their way into the trap.” (USDA 1995, Vol. II, p. A-9).

Mass trapping is likely to maintain the forest condition in the short-term by eliminating gypsy moth populations in the treatment sites, thus delaying gypsy moth from expanding and causing defoliation. In the long-term, gypsy moth will become well established in these counties; even if this alternative is implemented.

**Alternative 5 - Btk, Mating disruption, and Mass trapping.** The nontarget and environmental consequences stated above for Alternatives 2, 3 and 4 apply to this alternative.

#### **4.3 Economic and Political Impacts of Treatment vs. Non-Treatment (Issue 3).**

**Alternative 1 – No action.** If no treatments were applied, the likely action would be to implement a quarantine in these counties during the next year. A quarantine would regulate movement of firewood, logs, other timber products, mobile homes, recreational vehicles, trees, shrubs, Christmas trees, and outdoor household articles. This would create a financial impact to industries that deal with these products.

If current populations are not treated, they will continue to reproduce and grow in size. Defoliation would become noticeable in the future, but it would be difficult to predict exactly when noticeable defoliation would occur. Requests for federal assistance to suppress gypsy moth would be likely when defoliation occurs. Suppression projects are generally more expensive in total dollars than eradication projects because much larger areas are treated. The

economic impact to state budgets would increase, as responsible agencies would need to administer and fund these suppression projects.

Following defoliation, negative financial impacts are likely to occur for recreational industries such as resorts and campgrounds. Homeowners, private woodland owners, and forest-based industries could be impacted by gypsy moth treatment costs, tree mortality, and adverse human health effects.

**Alternative 4 – Mass trapping.** If treatments are applied, regulatory action is not likely for these counties during the next year and the impacts listed under Alternative 1 would be delayed. Mass trapping is typically used in small areas (less than 40 acres) because it is labor intensive (USDA 1995, Vol. II, p. A8-9). Its use for all treatment sites would be cost prohibitive.

**Alternatives 2 (Btk), 3 (Mating disruption) and 5 (Btk, Mating disruption, and Mass trapping).** If treatments are applied, regulatory action is not likely for these counties during the next year and the impacts listed under Alternative 1 would be delayed.

Economic analysis from the Slow-The-Spread Program (STS) demonstrated the use of Btk, mating disruption and other STS technology reduced the spread of gypsy moth by as much as 60 percent (Sharov et al. 2002, p. 32). The Eastern Plant Board recognized that the benefit of delaying gypsy moth resulted in an economic benefit of \$22.00 for each dollar invested in treatment cost and that the STS Program protected timber, recreation, and private property values (Eastern Plant Board 1997).

#### **4.4 Likelihood of Success of the Project (Issue 4).**

**Alternative 1 – No action.** Project objectives would not be met with this alternative. Gypsy moth would not be eliminated from the treatment sites, and its population would serve as a source for increased spread within the counties and into surrounding counties. If these populations were allowed to increase and expand, gypsy moth could spread through the state in 10 years (Sharov et al. 2002).

**Alternative 2 - Btk.** Project success is likely with this alternative. Btk is effective in eliminating gypsy moth in the treatment sites with low gypsy moth populations.

**Alternative 3 – Mating disruption.** Project success is likely with this alternative in two sites. However, most sites have gypsy moth populations above the recommended level for treatment with mating disruption.

**Alternative 4 – Mass trapping.** Mass trapping is a labor-intensive treatment and sites greater than 40 acres are usually not mass trapped. It would not be feasible to mass trap all treatment sites.

**Alternative 5 - Btk, Mating disruption, and Mass trapping.** Project success is optimized with this alternative when treatment selection criteria are used to determine the use of Btk, mating disruption or mass trapping alone or in combination for each site. Over the past 4 years, the

leading edge of gypsy moth populations (as defined by the 10-moth line) has been below the suggested goal of 6.25 miles/year in Indiana while implementing the Slow The Spread Program (STS). From the data analysis by the STS Program, the average rate of spread in Indiana during 2005-2008 was calculated to be 5.44 miles per year. Treatment selection criteria used to evaluate each site are: 1) gypsy moth population level, 2) habitat type (urban, rural, open water or wetland), 3) nontarget organisms, 4) safety, and 5) cost and project efficiency.

#### 4.5 Unavoidable Adverse Effects

No unavoidable adverse effects were identified for the proposed project.

#### 4.6 Irreversible and Irretrievable Commitments of Resources

An irreversible commitment of resources results in the permanent loss of: 1) nonrenewable resources, such as minerals or cultural resources; 2) resources that are renewable only over long periods of time, such as soil productivity; or 3) a species (extinction) (USDA 1995, Vol. II, p. 4-93). Except for Alternative 1, there is an irreversible commitment of labor, fossil fuel, and money spent on the project.

An irretrievable commitment is one in which a resource product or use is lost for a period of time while managing for another (USDA 1995, Vol. II, p. 4-93). For this project, no irretrievable commitments were identified.

#### 4.7 Cumulative Effects

No cumulative effects were identified for this proposed project. Cumulative effects are the incremental impacts of the action when added to past, present, and reasonably foreseeable future actions, which are collectively significant. Nine sites proposed for treatment in 2009 had treatments in the past five years (See Table 3).

Table 3. Summary of Treatment History of 2009 Proposed Treatment Sites by Year and Treatment Method\*.

County	2009 Site Name	Site Treatment History **					2009 Proposed Treatment
		2004	2005	2006	2007	2008	
Allen	Arlington Park 09					Btk	Btk
Allen	Crescent 09		Btk	Btk, MD	Btk		Btk
Allen	Lindenwood 09						Btk
Allen	Memorial Park 09					Btk	Btk
Allen	Papermill 09				MD		Btk
Allen	Smith Field 09				Btk	Btk	Btk
Allen	St. Joe 09					Btk	Btk
Allen	Vance Avenue 09	Btk	Btk	Btk, MD			Btk
Kosciusko	Warsaw North 09						MD
Kosciusko	Warsaw South 09						MD
LaPorte	Beatty 09					Btk	Btk
LaPorte	Lofgren 09					Btk	Btk

\*Treatment method: Btk = *Bacillus thuringiensis* var. *kurstaki*

MD = Mating disruption using pheromone flakes

\*\* Indicates previous treatments where there was partial overlap with the 2009 proposed treatment site.

Cumulative effects on local lepidopteran populations from Btk applications over several years are not anticipated because the treatment sites are generally less than 1000 acres and similar habitats are nearby that have not been treated. These treatment sites are likely to be recolonized rapidly (USDA, 1995, Vol. II, p. 4-89 to 4-91). No aerial application for gypsy moth by the private sector is expected in the proposed treatment counties during the current year. No cumulative effects of the prior treatments are anticipated.

## **4.8 Other Information**

### **Mitigation**

The Cooperative Gypsy Moth Project will implement the following safeguards and mitigating measures:

- News releases of treatments and dates will be given to local newspapers and radio/TV stations.
- Local safety authority will be notified by direct contact or phone calls.
- Employees of state and federal agencies monitoring the treatment will receive training on treatment methods to be able to answer questions from the public.
- Application of Btk will be suspended when school buses are in the site and when children are outside on school grounds.
- Aircraft will be calibrated for accurate application of treatment material.
- Applications will be timed so the most susceptible gypsy moth stage is targeted.
- Weather will be monitored during treatment to assure accurate deposition of the treatment material.
- The wind speeds during the application will be monitored by IDNR personnel and the aerial applicator will maintain the application within the boundaries of the proposed treatment site.
- Treatment will be avoided or stopped if winds are above the guidelines stated in the Work and Safety Plan.

### **Monitoring**

During the treatments, ground observers and/or aerial observers will monitor the application for accuracy within the site boundaries, swath width, and drift. Application information (e.g. swath widths, spray-on and spray-off, acres treated, and altitude) will be downloaded to an operations-base computer.

The Btk and mating disruption treatment sites will be monitored using gypsy moth traps to determine the effectiveness of the treatments.

## 5.0 LIST OF PREPARERS

**Phil Marshall**, State Entomologist and Forest Health Specialist, Division of Entomology and Plant Pathology and Division of Forestry (respectfully), Indiana Department of Natural Resources, 402 W. Washington Street, Room 290/296W, Indianapolis, IN 46204.

EA Responsibility: Participated in writing and reviewing the environmental assessment and in the development of the proposed cooperative gypsy moth project.

Experience and Education: Experience as Forest Health Specialist since 1974 and experience in gypsy moth management since 1977. M.F., Duke University in Forest Entomology and Pathology; B.A., Catawba College in Pre-Forestry.

**Dennis Haugen**, Entomologist, USDA Forest Service, Northeastern Area State and Private Forestry, Forest Health Protection, 1992 Folwell Ave., St. Paul, MN 55108.

EA Responsibility: Participated in writing and reviewing the environmental assessment and in the development of the proposed cooperative gypsy moth project.

Experience and Education: Forest entomologist with the USDA Forest Service in St. Paul, MN since 1993. Ph.D., Iowa State University in Entomology and Forest Biology; M.S., University of Arkansas-Fayetteville in Entomology; B.S., Iowa State University in Forestry and Entomology.

**Angela Rust**, SW Nursery Inspector and Compliance Officer, Division of Entomology and Plant Pathology, Indiana Department of Natural Resources, 145 24<sup>th</sup> Street, Tell City, Indiana 47586.

EA Responsibility: Participated in writing and reviewing the environmental assessment and in consultation of the proposed cooperative gypsy moth project.

Experience and Education: Nursery Inspector and Compliance Officer with the Indiana Department of Natural Resources, Division of Entomology and Plant Pathology since 1995. B.S., Purdue University in Entomology.

## **6.0 LIST OF PERSONS AND AGENCIES CONSULTED**

Eric Biddinger, Nursery Inspector and Compliance Officer, IDNR Entomology and Plant Pathology, 402 West Washington Street, Room 290W, Indianapolis, IN 46204. Consultation on treatment sites and proposed project.

Kallie Bontrager, Nursery Inspector and Compliance Officer, IDNR Entomology and Plant Pathology, 402 West Washington Street, Room 290W, Indianapolis, IN 46204. Consultation on treatment sites and proposed project.

J. Matthew Buffington, Environmental Supervisor, IDNR Division of Fish and Wildlife, 402 West Washington Street, Room 273W, Indianapolis, IN 46204. Consultation on treatment sites and proposed project.

Vince Burkle, Nursery Inspector and Compliance Officer, IDNR Entomology and Plant Pathology, 402 West Washington Street, Room 290W, Indianapolis, IN 46204. Consultation on treatment sites and proposed project.

Mike Connor, Forest Entomologist, USDA Forest Service, Forest Health Protection, 1992 Folwell Ave., St. Paul, MN 55108. Review of the Environmental Assessment.

James Glass, Director, IDNR Division of Historic Preservation and Archaeology, 402 West Washington Street, Room W274, Indianapolis, IN 46204. Consultation on historical properties of concern.

Scott Kinzie, Nursery Inspector and Compliance Officer, IDNR Entomology and Plant Pathology, 402 West Washington Street, Room 290W, Indianapolis, IN 46204. Consultation on treatment sites and proposed project.

Donna Leonard, Entomologist, STS Coordinator, USDA Forest Service, FHP, P.O. Box 2680, Asheville, NC 28802. Consultation on treatment sites.

Scott Pruitt, Field Supervisor, US Fish and Wildlife Service, 718 North Washington Street, Bloomington, IN 47404. Consultation on threatened and endangered species.

Zack Smith, Forest Entomologist, IDNR Forestry, 402 West Washington Street, Room 296W, Indianapolis, IN 46204. Consultation on treatment sites and development of cooperative project.

Christie Stanifer, Environmental Coordinator, Environmental Unit, IDNR Division of Fish and Wildlife, 402 West Washington Street, Room 264W, Indianapolis, IN 46204. Consultation on treatment site and proposed project.



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## **APPENDIX A: ISSUES, QUESTIONS AND CONCERNS FROM PUBLIC INVOLVEMENT**

The public involvement process begins with a mailing of letters to all the residents within the proposed treatment sites to notify them of public meetings scheduled to inform them about the proposed project. All questions, answers and comments are recorded from the public meetings. Contact information is also provided at the meetings to allow the public to comment by letter, phone or email at a later date. All comments received after the public meetings are recorded and a response given to the resident by phone, email, letter or a combination of the above.

All questions, comments and concerns from the meetings, letters, emails and phone calls are summarized in this appendix.

At each of the public meetings (Table 1), representatives from the Division of Entomology and Plant Pathology presented the proposed gypsy moth project, and answered and received questions and comments. The presentation explained:

- the life cycle, feeding habits and hosts of gypsy moth,
- the identification of gypsy moth,
- survey methods,
- gypsy moth impacts and damage to the trees and forest,
- selection of proposed sites,
- selection of the treatment options,
- the timing and application of treatments,
- boundaries of the treatment sites with maps and photos,
- and the public comment time period and decision process.

Both during and following the presentation, questions and comments were taken, answered and discussed with the people attending the meetings. A representative from Purdue University also attended some of the meetings and assisted in answering and discussing questions and comments from the people attending the meetings.

The questions and comments received at the public meetings and after the public meetings concerned four main issues:

- Human and animal health and safety;
- Nontarget effects and environmental effects;
- Economic and political impacts;
- Likelihood of success of the proposed project, past projects and the treatment options proposed.

## ISSUES

### Human health and safety

The questions and comments received from the public regarding human health and safety were in three areas:

- The use and risks of Btk and pheromone flakes
- The decision and notification process for the implementation of the project
- The time of application of Btk and pheromone flakes
- The security measures taken during the project

Btk questions were asked concerning the risk to adults and children; when people can go outside again after a treatment and if there is any kind of irritation caused by the product. The responses explained that no hazards-either immediate or cumulative, have been identified for the general public when exposed to Btk; that Btk naturally occurs in the soil; that treatments are not conducted when school buses or children are outside in the site; that Btk is applied to foliage, it breaks down in the environment in a few days; that Btk dries in about 30 minutes and we recommend people wait that amount of time before going outside.

Pheromone flake questions were asked concerning the risk to adults and children. It was responded that no hazards, either immediate or cumulative, have been identified for the general public when exposed to pheromone flakes and the pheromone is specific to the gypsy moth. The question was also asked if campgrounds would be closed during the treatments. The reply stated that campgrounds won't be closed by the DNR, but would be notified of the treatment. A citizen wanted to know what kind of material the plastic flake carrier is made of and the reply stated that it is made from PVC. A question was asked if any known carcinogens are used in the flakes and the reply was that no, none known are used. It was asked if the flakes would stay inside houses. The reply stated no.

Questions that were asked regarding the decision and notification process for proposed treatments were: would the public be notified when the treatments will occur and would updates be posted on the website. The responses explained that residents will be notified by mail approximately two weeks prior to the treatment; that residents would be notified through local media (radio, television, newspaper) a couple days prior to the treatment and that updates will be posted to our website.

Questions were asked regarding the time of the application and the response was that the timing of the treatments was dependent upon weather conditions and that treatments are generally started in the early morning hours (first light). Btk treatments are applied during May and pheromone flake treatments are applied during June. Most sites treated with Btk will receive two applications, with the second application being 4-10 days after the first application.

A question was asked regarding how low the planes fly and the response stated that the treatment planes fly low, just over the tree tops. Usually 50-100 feet above the tree tops, but sometimes higher depending on the site.

There were a few individuals (a minority) at the public meeting who opposed the treatment using pheromone flakes in Kosciusko County. Their comments made at the public meeting were recorded, in addition to any subsequent comments received by phone, letter or email.

### **Nontarget effects and environmental effects**

Questions were asked if Btk affects mammals, fish, birds, nontarget lepidopteran, other insects, or ground water. It was responded that Btk does not negatively affect mammals, fish, birds or other insects. Btk naturally exists in soil, breaks down quickly in the environment and does not affect ground water. Bt products are commonly used in organic gardening. It was stated that Btk can affect other nontarget butterfly and moth (lepidopteran) caterpillars; however Btk will be applied at a time of year when the majority of caterpillars have not hatched yet. Btk only affects the larval or caterpillar stage. The question was asked if there are concerns for pets getting Btk on their paws. The reply stated that since Btk exists naturally in the soil, it is a substance that outside pets are already coming into contact with and the amount of Btk that a pet might get on their paws is very minimal.

The question was asked if the mating disruption flakes completely degrade. The reply stated that, yes the pheromone degrades quicker from the flake, but the PVC stays in the environment longer.

### **Economic and political impacts**

A question was asked if there were restrictions with firewood movement from Kosciusko County with regard to gypsy moth. The reply stated that there were not any restrictions on firewood for gypsy moth, but that nursery stock was monitored. Firewood movement from Kosciusko County is restricted due to the Emerald Ash Borer quarantine. A citizen wanted to know when we would know for sure if the Lamlie Road site in Allen County would have funding for treatment. The reply stated that funding is not likely going to be available. A citizen wanted to know what would happen to the comments made by the public. The reply stated that all comments would be reviewed by the DNR and cooperating agencies and that all comments would be considered when making the final decision. It was asked if the funding for the project was provided by the state and it was replied that the funding costs were shared by the Indiana DNR and the US Forest Service. A citizen asked if they could put in a request to be dropped from the treatment area, and it was replied that they could put in a request to our office.

A general comment was given at an Allen County meeting that they commended us for holding a public meeting to inform the public.

There were a few individuals (a minority) at the public meeting who opposed the treatment using pheromone flakes in Kosciusko County. Their comments made at the public meeting were recorded, in addition to any subsequent comments received by phone, letter or email.

### **Likelihood of success of the proposed project and the treatment options proposed**

Mating disruption (pheromone flake) questions: A question was asked if we were still seeing leaves on the trees where mating disruption had been used in the past and the reply was yes, and that populations had been decreased after the treatment. A question was asked regarding what kind of success rate that the citizens might see in the Kosciusko County treatment sites. The reply stated that the degree of success varies and that we might need to treat again the following year or it might be years before we need to treat in the area again.

Btk questions: A citizen asked if we had seen an increase in natural predators/enemies since we had been treating for gypsy moth in Indiana. The reply was that we have seen the presence of natural enemies, but surveys have not been conducted to quantify their populations. The question was then asked about how we evaluate success after a treatment. The reply stated that the degree of success is evaluated on the number of male moths trapped in the area later that year and whether or not egg masses are found during the fall survey. It was also asked if rain affects the Btk and it was replied that as long as the Btk has time to dry before it rains, then rain will not affect the success of the treatment.

### **Other questions and concerns**

Questions were asked about: trapping and survey methods; who they could contact to come look at their trees; general biology questions about gypsy moth; what control options were available to homeowners and what other controls are being explored; what natural predators/pathogens were present in Indiana; how to look for egg masses; how soon defoliation might occur; what plant species gypsy moth prefers; how the pheromone flakes are made; how proposed treatment sites are determined and a number of questions regarding other insect pest issues and their control.

The response for trapping and survey methods explained how traps are set based on a grid system and how moth counts are used to locate increasing populations and then the moth counts are then used to try and locate egg masses. The quantity and location of moths and egg masses and locations of habitat determine whether an area is proposed for treatment or not and what the boundaries of the proposed treatment site are.

The response for whom to contact to investigate possible gypsy moth finds on properties stated that the IDNR would send a local employee out to examine trees.

Several general questions on biology were responded to, by restating information from the presentation slides and by explaining the difference between gypsy moth and other common caterpillars.

Control and survey options for homeowners were explained such as: burlap banding, soybean oil sprays and insecticide sprays. It was stated that egg masses can be found anywhere on a tree or on any outdoor article, house or vehicle. Gypsy moth defoliation may not occur for several years in an infested area.

It was responded that Indiana does have some natural animal and bird predators and also a pathogen that will kill gypsy moth. New potential predators and parasites are currently being explored.

The responses of preferred gypsy moth hosts included many urban landscape tree and shrub species, with over 500 known species as hosts.

It was explained that the pheromone flakes are made by chemically reproducing an exact copy of the female gypsy moth's pheromone. The pheromone is then incorporated onto small plastic flakes.

Lastly, a number of other responses were given in answer to questions on bagworm and other insects, based on the information given at the meeting.

**Table 1.** Date, time and attendance of public meetings for the proposed treatment sites by county.

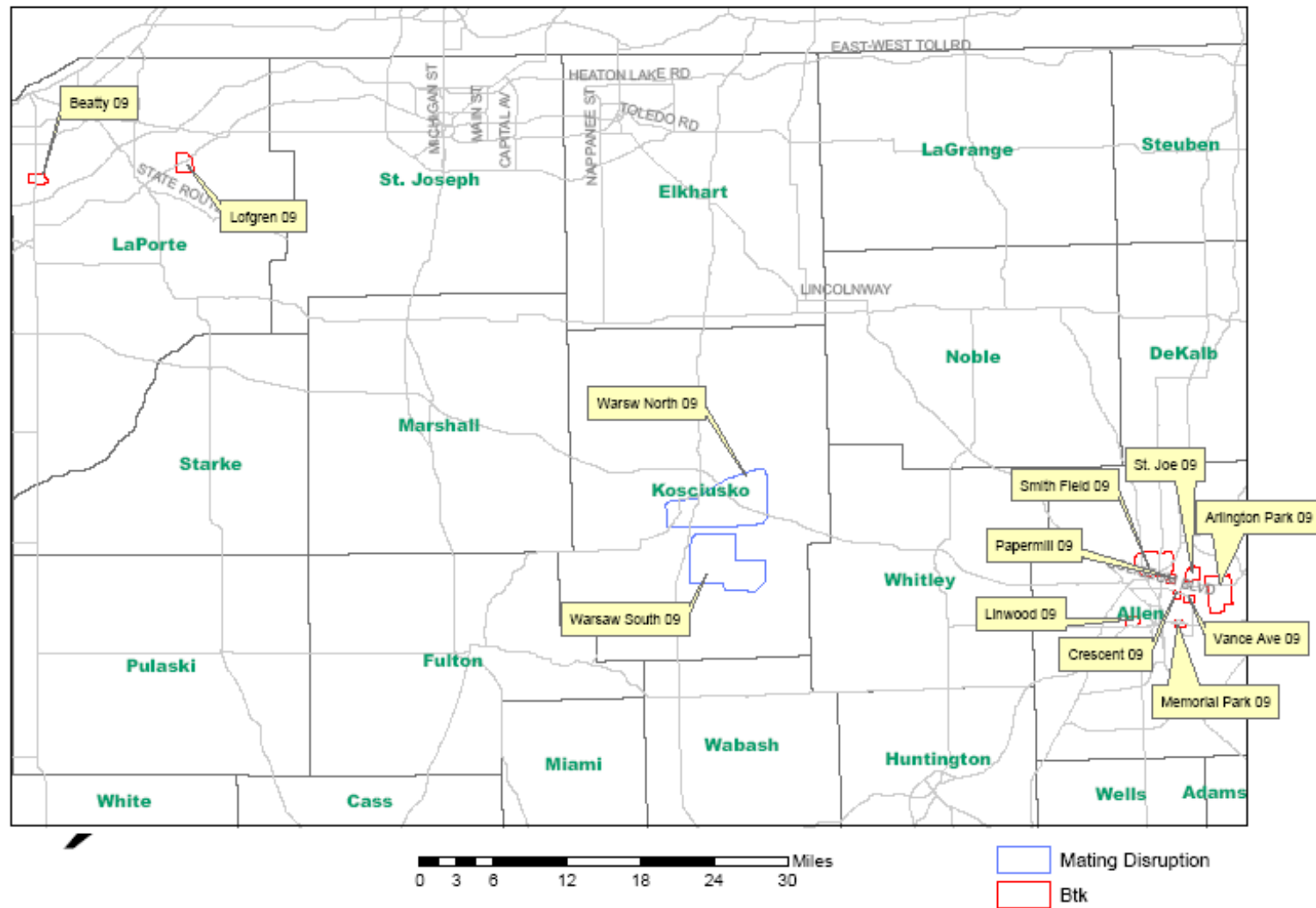
COUNTY	SITE	DATE	TIME	# Attending
Allen	Arlington Park 09 Crescent 09 Lindenwood 09 Memorial Park 09 Papermill 09 Smith Field 09 St. Joe 09 Vance Avenue 09	January 20, 2009	6:00 PM	14
		January 21, 2009	3:00 PM	42
			6:00 PM	22
Kosciusko	Warsaw North 09 Warsaw South 09	January 24, 2009	3:00 PM	87
		January 26, 2009	3:00 PM	24
LaPorte	Beatty 09 Lofgren 09		6:00 PM	16
		January 28, 2009	4:00 PM	1
			6:00 PM	0
			Total in attendance for all meetings	

## APPENDIX B. MAPS OF PROPOSED TREATMENT SITES

COUNTY	SITE NAME	TREATMENT	MAP TYPE	PAGE
Indiana	All Sites		Street	B-2
Allen	Arlington Park 09	Btk x 2	Topographic	B-3
	Crescent 09	Btk x 2	Topographic	B-4
	Lindenwood 09	Btk x 2	Topographic	B-5
	Memorial Park 09	Btk x 2	Topographic	B-6
	Papermill 09	Btk x 2	Topographic	B-7
	Smith Field 09	Btk x 2	Topographic	B-8
	St. Joe 09	Btk x 2	Topographic	B-9
	Vance Avenue 09	Btk x 2	Topographic	B-10
Kosciusko	Warsaw North 09	MD	Topographic	B-11
	Warsaw South 09	MD	Topographic	B-12
LaPorte	Beatty 09	Btk x 2	Topographic	B-13
	Lofgren 09	Btk x 1	Topographic	B-14

Btk x 2 = *Bacillus thuringiensis* var. *kurstaki* with two aerial applications.  
 Btk x 1 = *Bacillus thuringiensis* var. *kurstaki* with a single aerial application.  
 MD = Mating disruption using pheromone flakes at 6 grams per acre.

## 2009 Proposed Gypsy Moth Aerial Treatment Sites





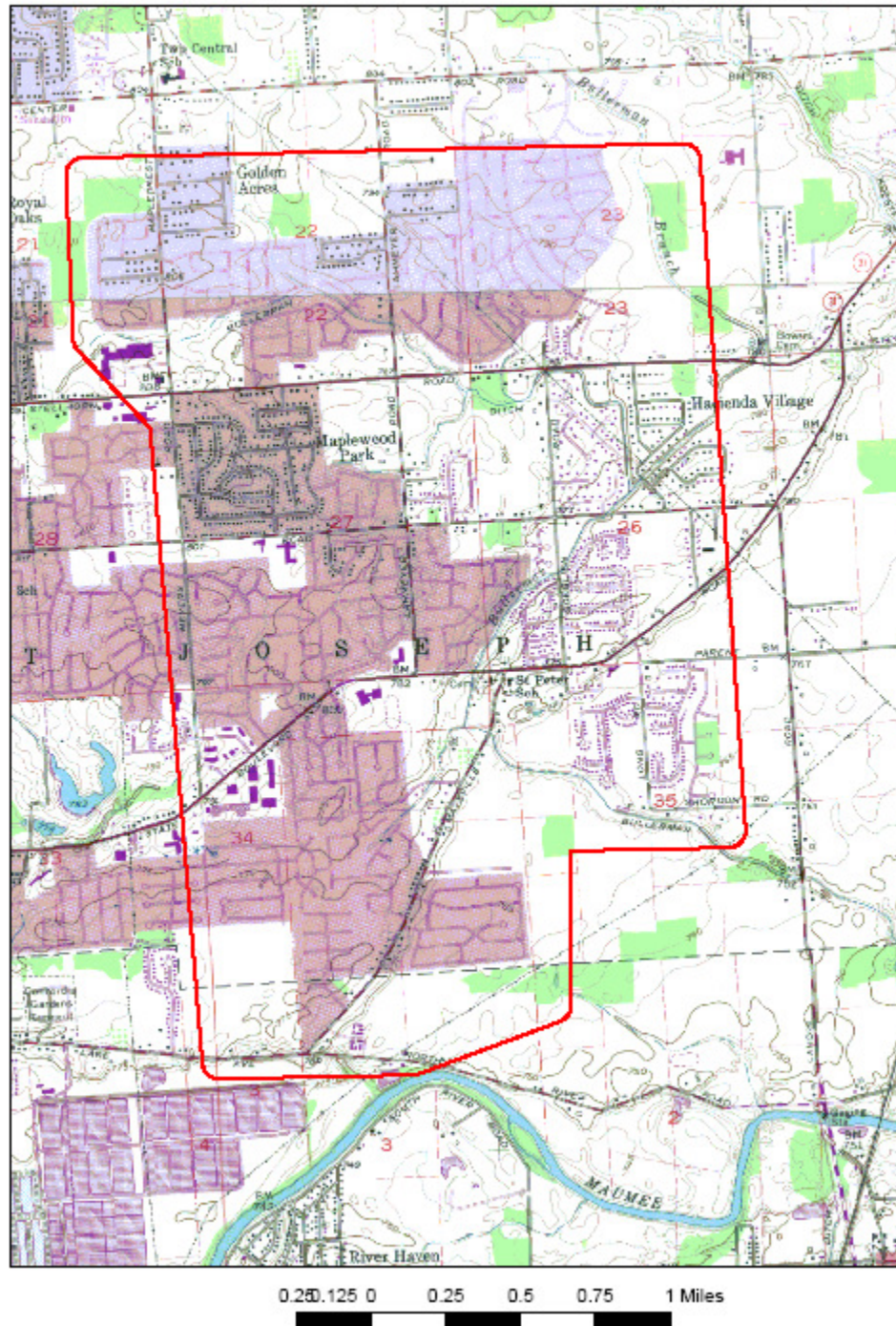
## 2009 Proposed Gypsy Moth Treatment Sites

Allen County

Block Name: Arlington Park 09

Acres: 3,532

Treatment: Btk



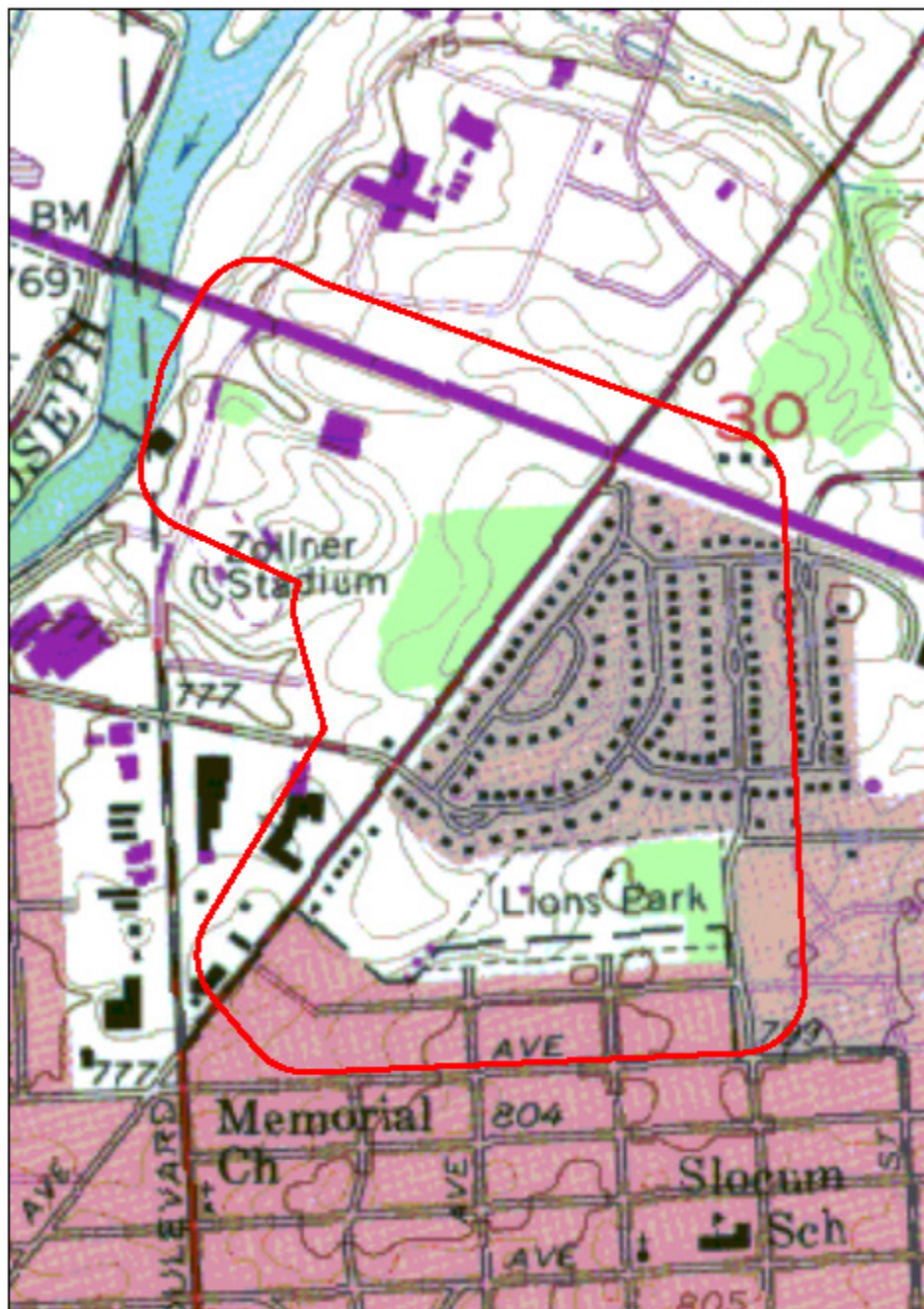
## 2009 Proposed Gypsy Moth Treatment Sites

Allen County

Block Name: Crescent 09

Acres: 196

Treatment: Btk



0.1 0.05 0 0.1 0.2 0.3 Miles



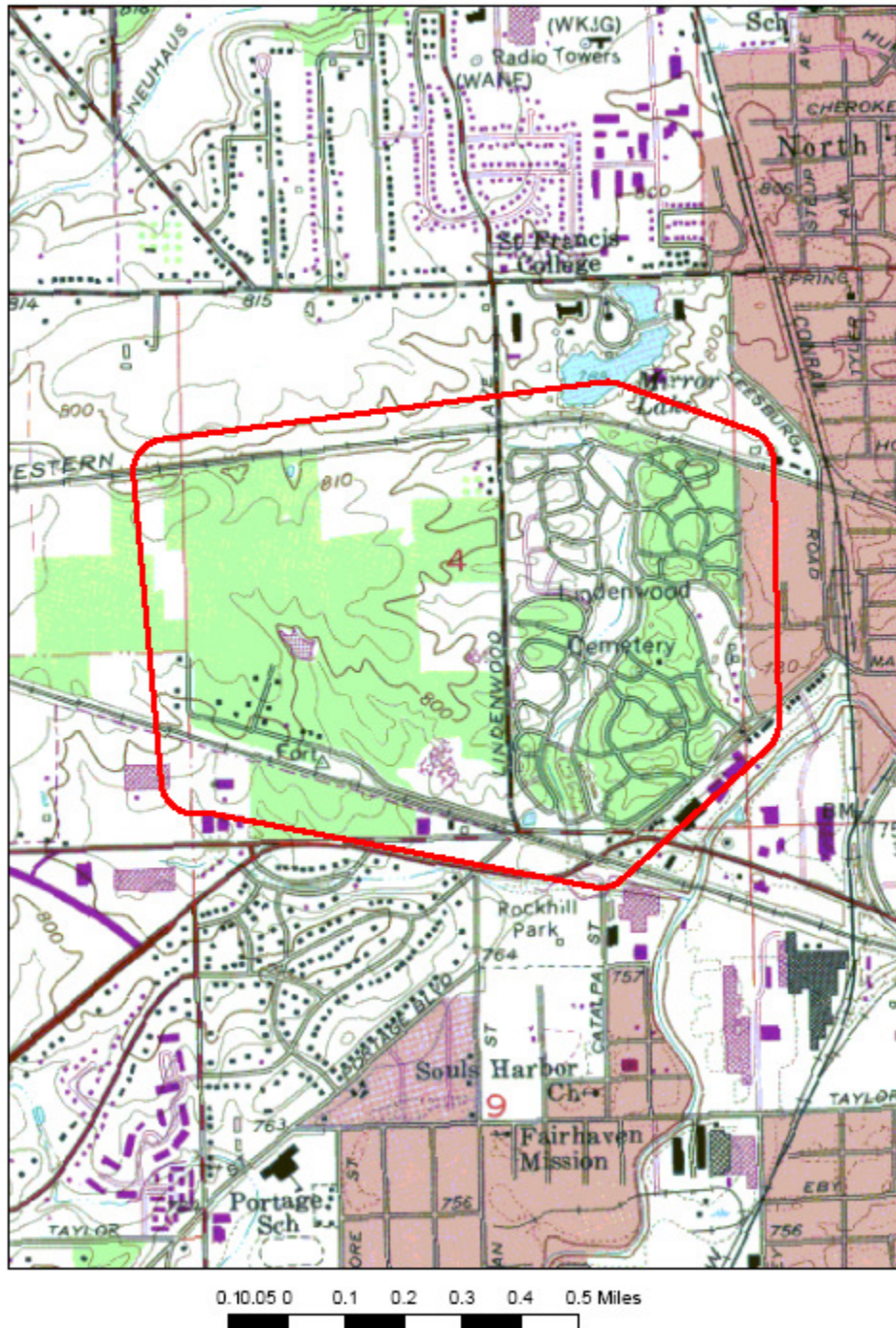
## 2009 Proposed Gypsy Moth Treatment Sites

Allen County

Block Name: Lindenwood 09

Acres: 507

Treatment: Btk



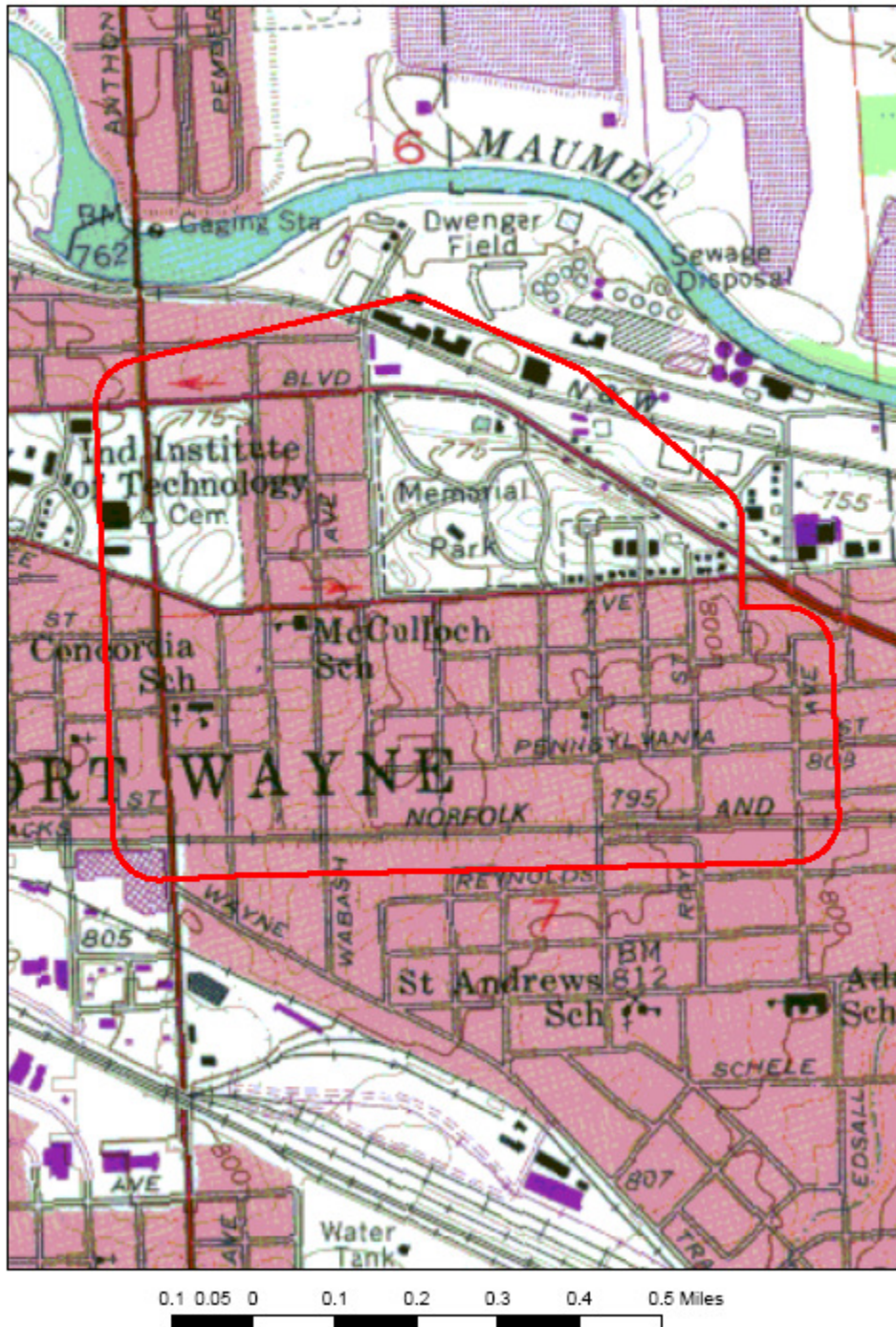
## 2009 Proposed Gypsy Moth Treatment Sites

Allen County

**Block Name: Memorial Park 09**

Acres: 337

Treatment: Btk





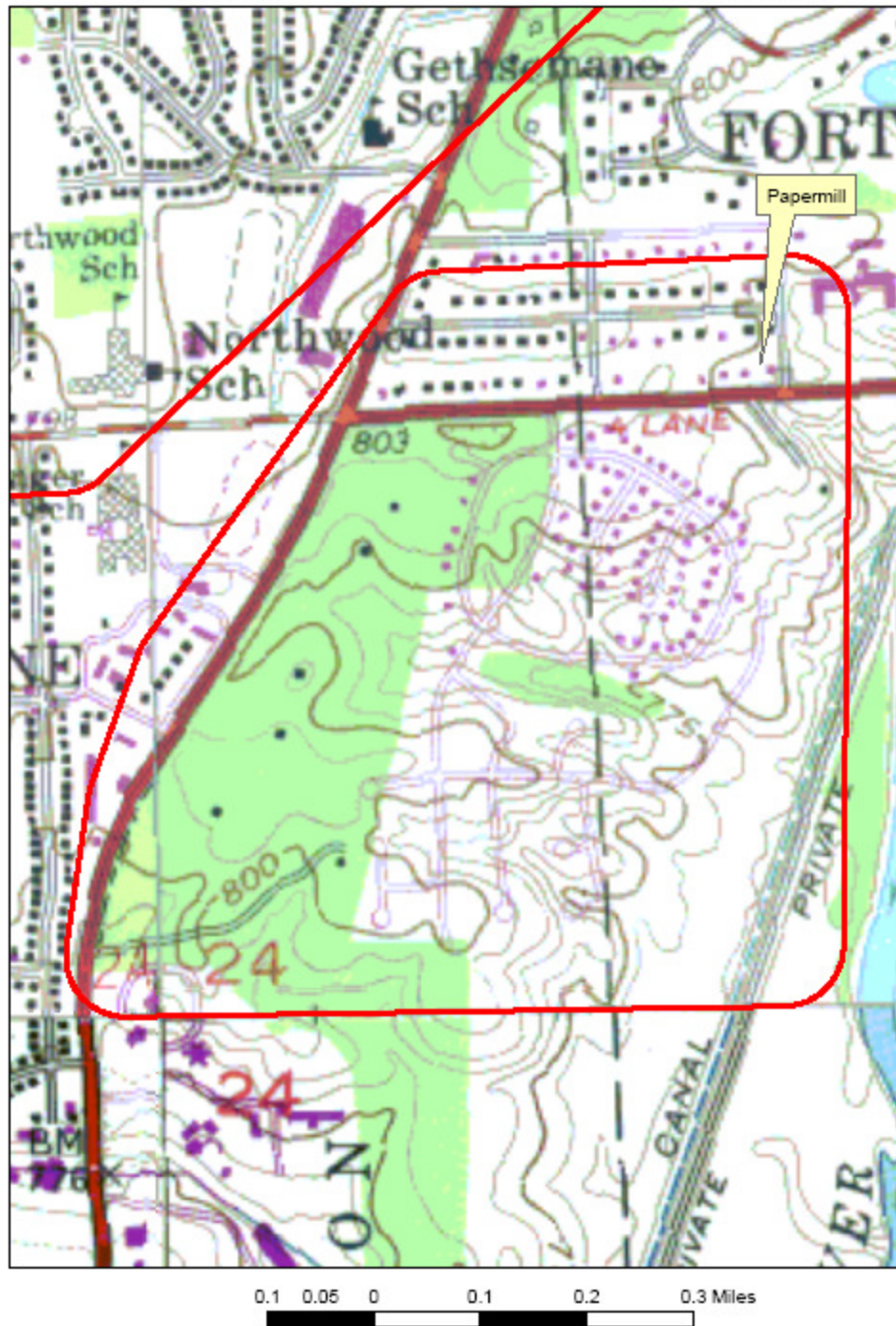
## 2009 Proposed Gypsy Moth Treatment Sites

Allen County

Block Name: Papermill 09

Acres: 278

Treatment: Btk



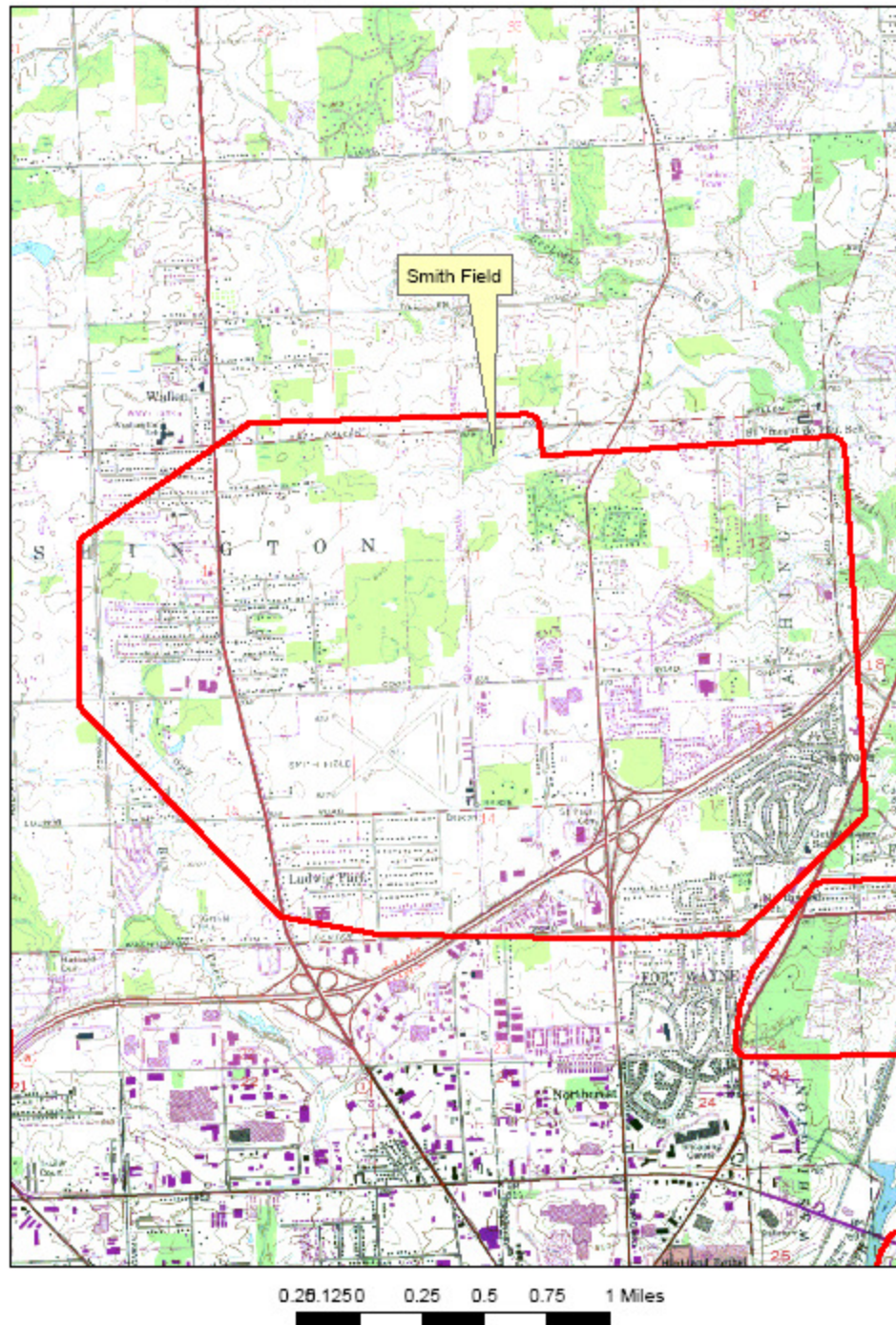
## 2009 Proposed Gypsy Moth Treatment Sites

Allen County

Block Name: Smith Field 09

Acres: 3,594

Treatment: Btk





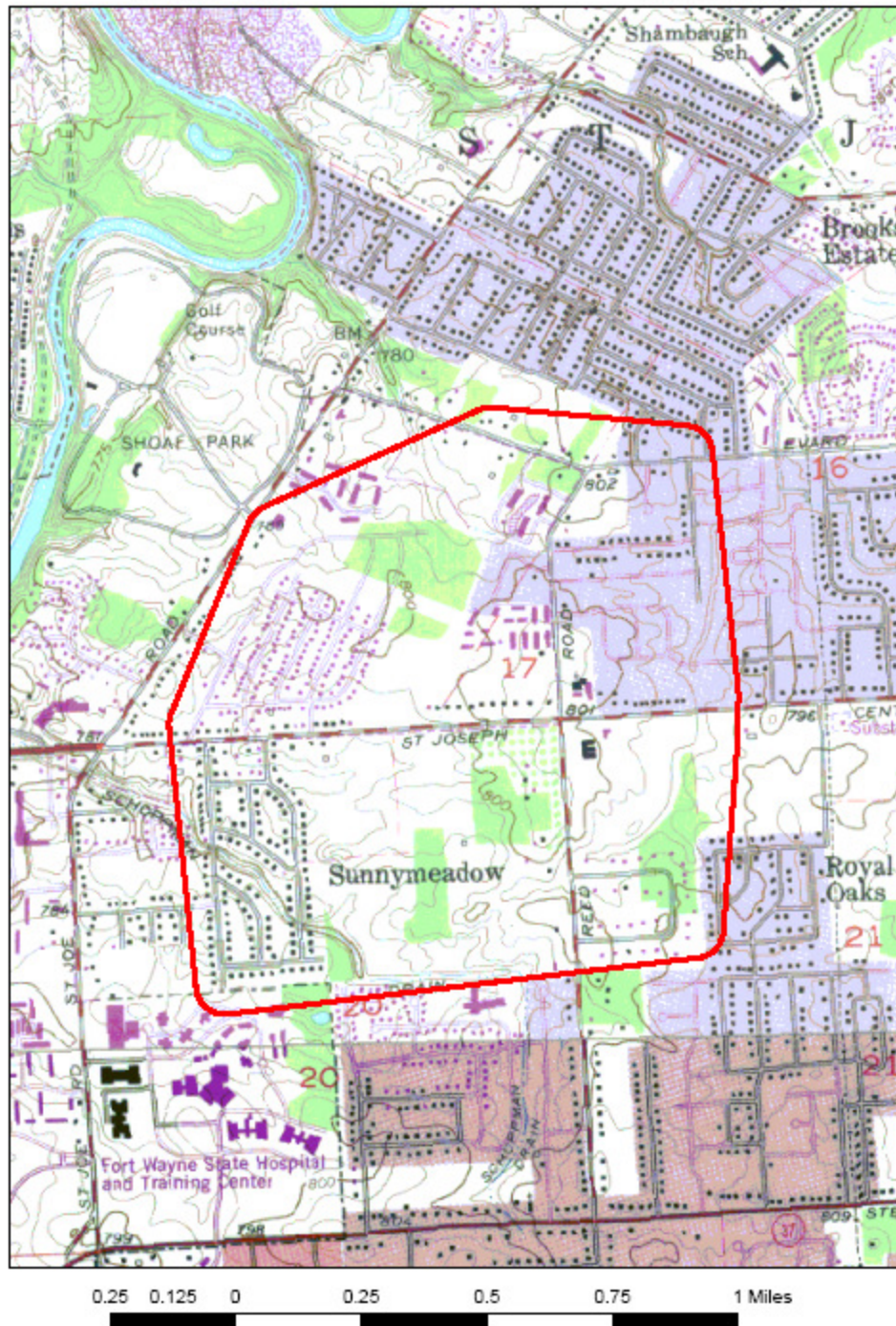
## 2009 Proposed Gypsy Moth Treatment Sites

Allen County

Block Name: St. Joe 09

Acres: 729

Treatment: Btk



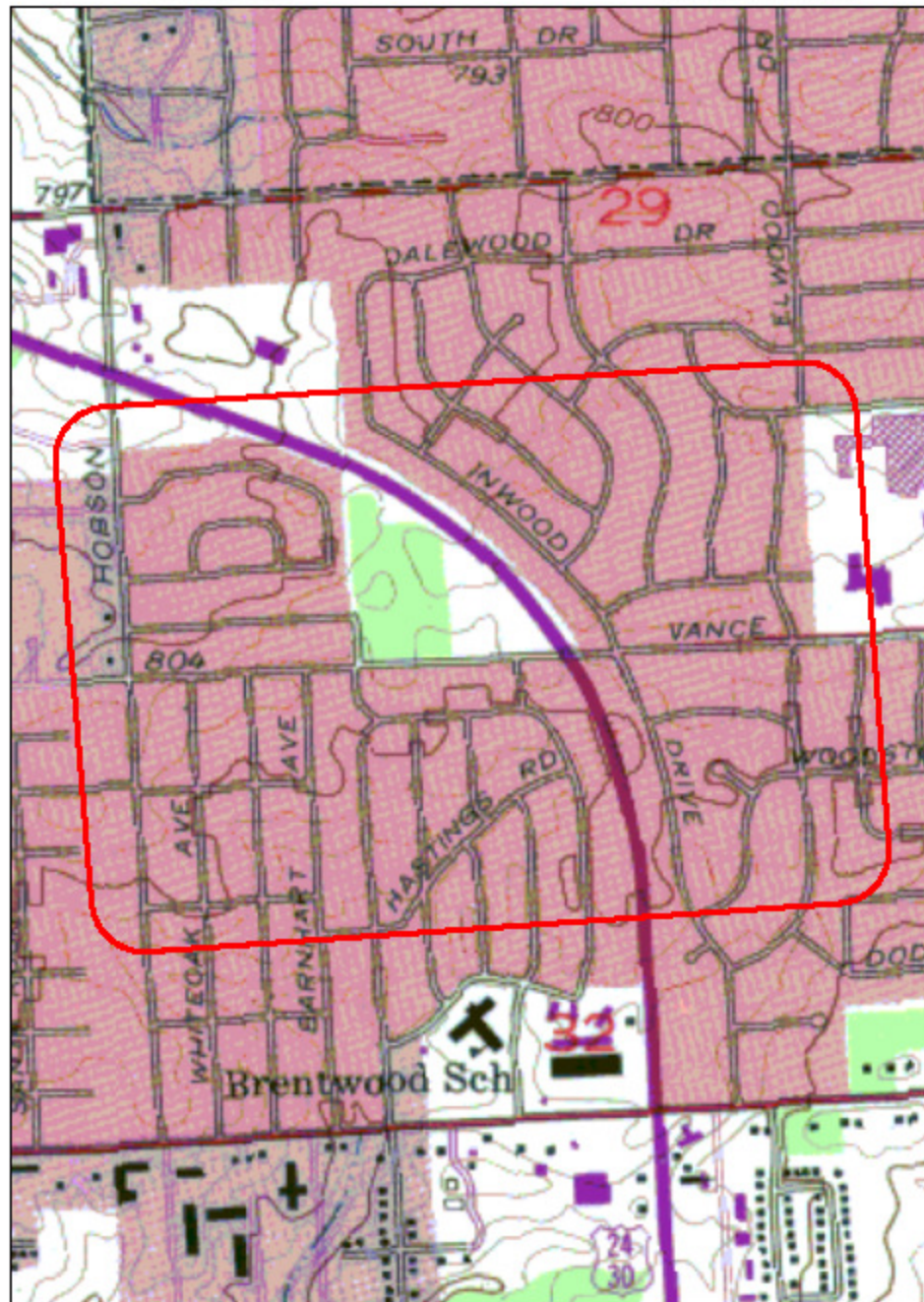
## 2009 Proposed Gypsy Moth Treatment Sites

Allen County

Block Name: Vance Ave 09

Acres: 320

Treatment: Btk



0.1 0.05 0 0.1 0.2 0.3 Miles



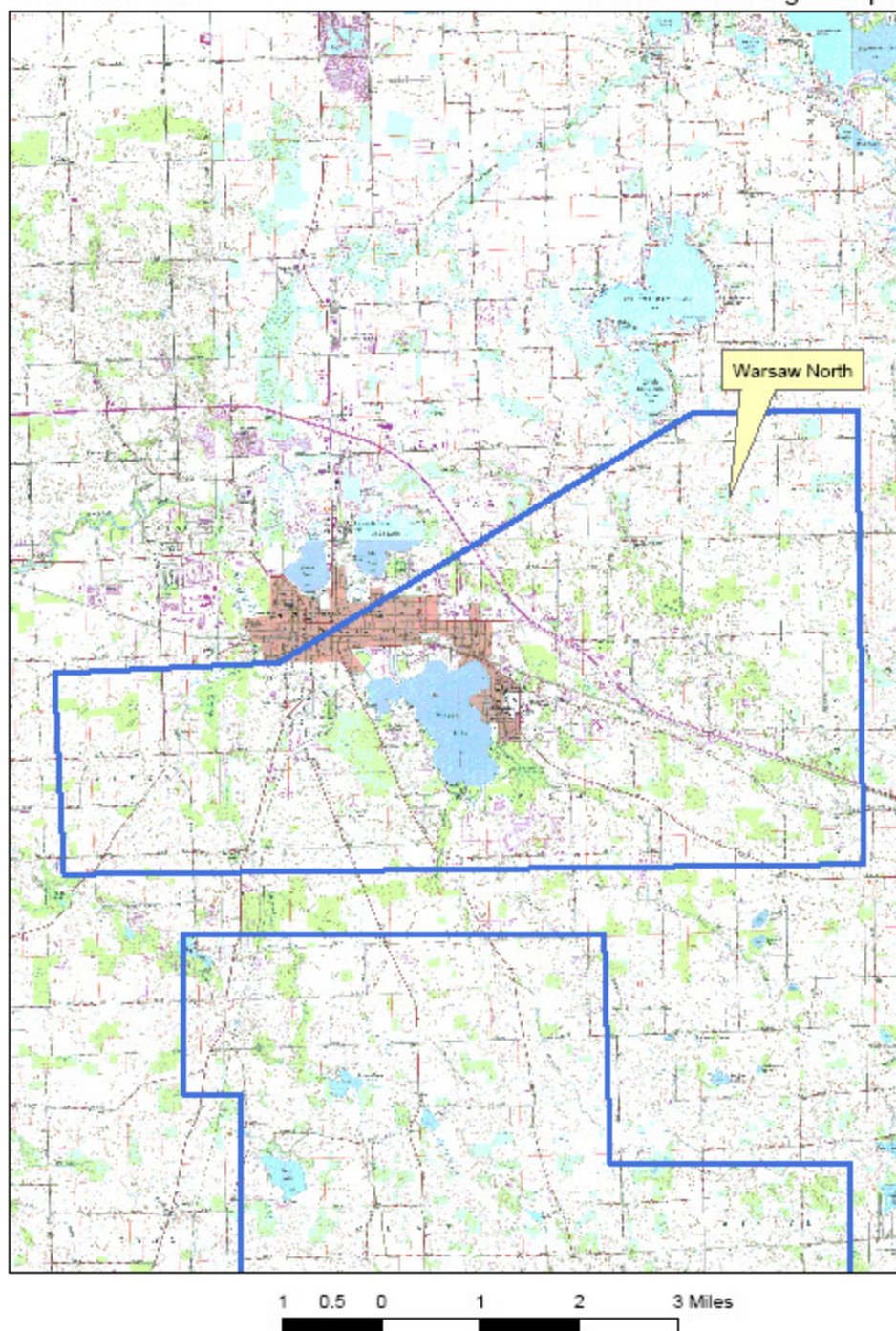
## 2009 Proposed Gypsy Moth Treatment Sites

Kosciusko County

Block Name: Warsaw North 09

Acres: 16,971

Treatment: Mating Disruption





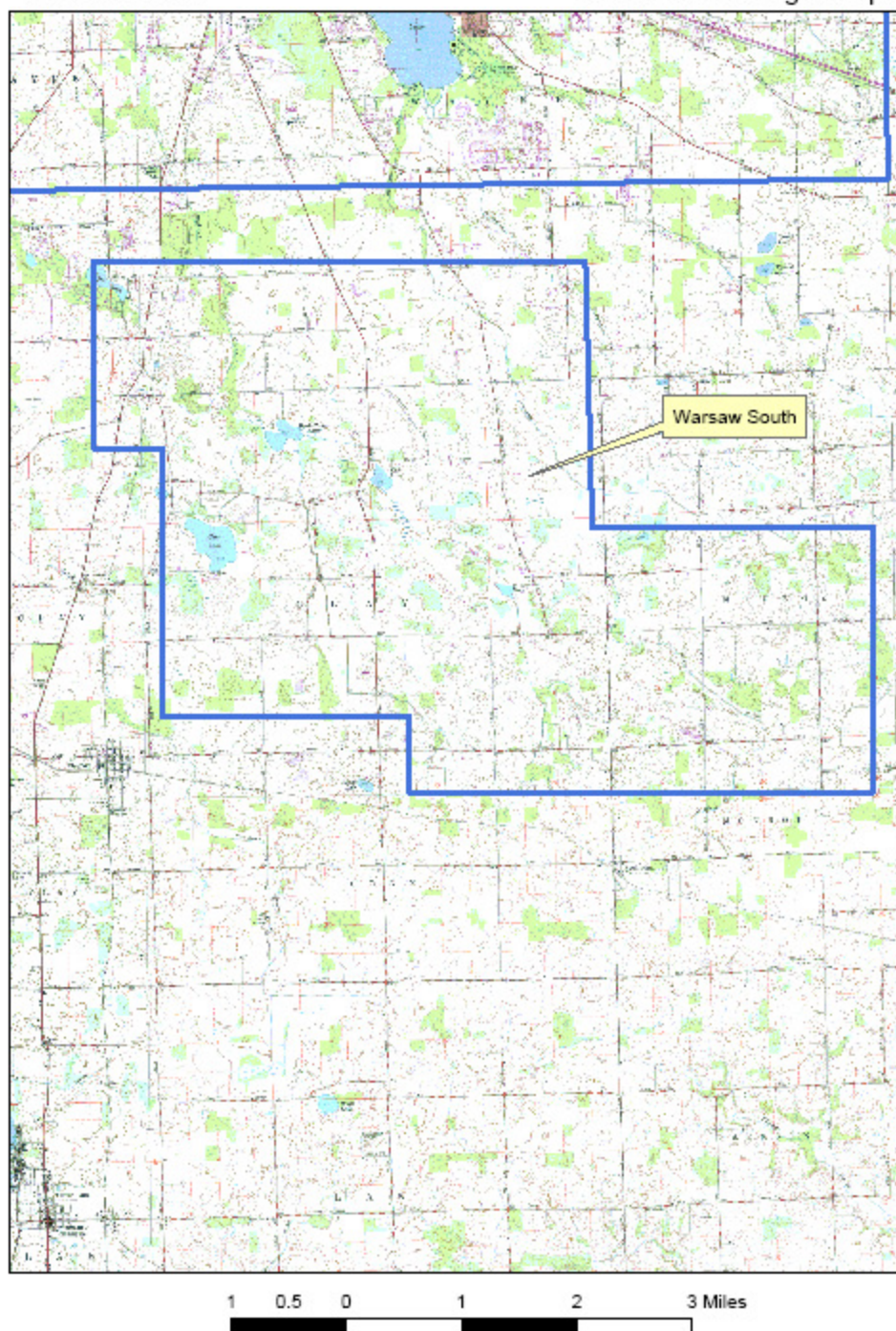
## 2009 Proposed Gypsy Moth Treatment Sites

Kosciusko County

**Block Name: Warsaw South 09**

Acres: 14,259

Treatment: Mating Disruption







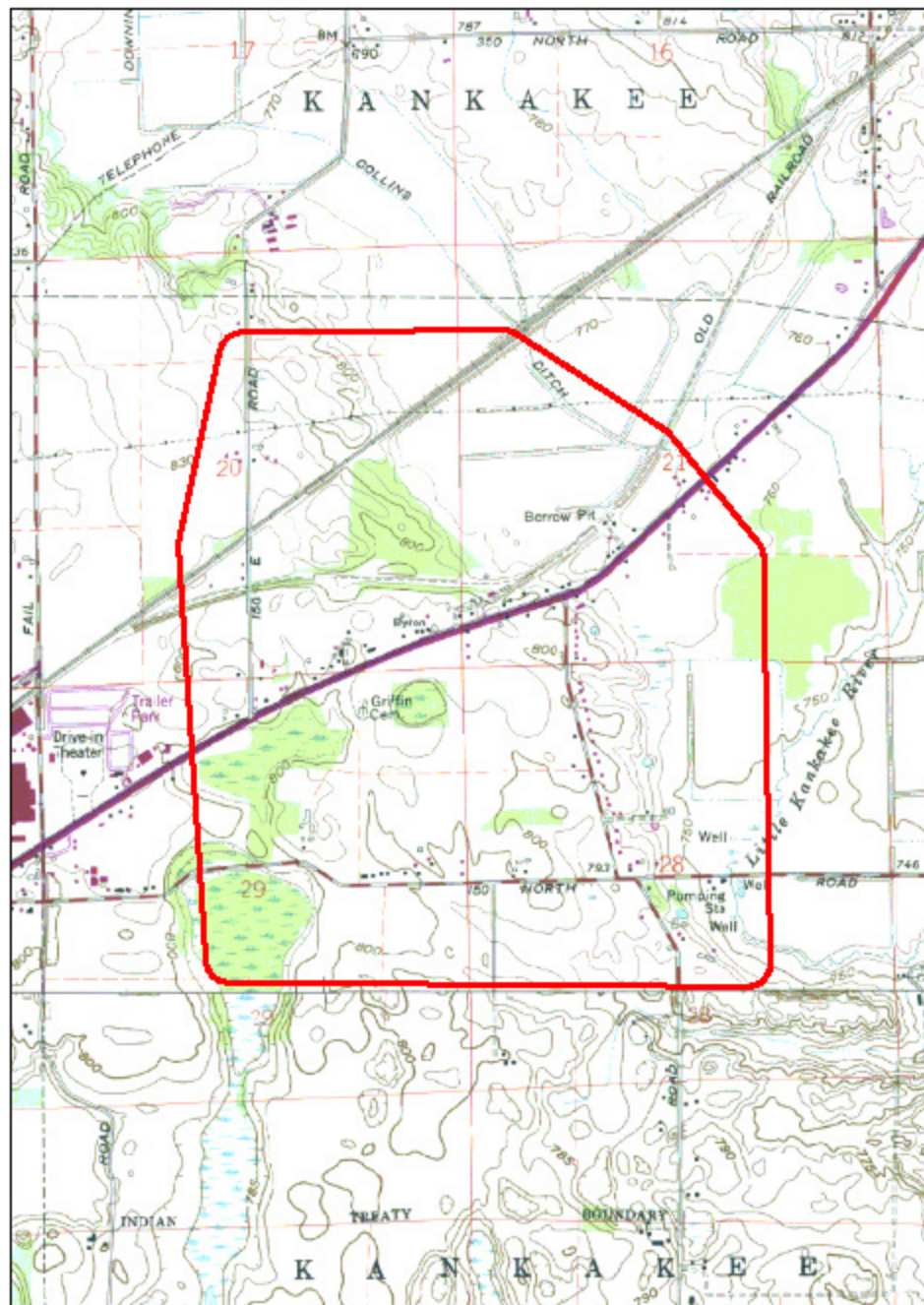
# 2009 Proposed Gypsy Moth Treatment Sites

LaPorte County

Block Name: Lofgren 09

Acres: 1,289

Treatment: Btk



0.050 0.1 0.2 0.3 0.4 0.5 Miles

## APPENDIX C. AGENCY LETTERS



### United States Department of the Interior Fish and Wildlife Service



Bloomington Field Office (ES)  
620 South Walker Street  
Bloomington, IN 47403-2121  
Phone: (812) 334-4261 Fax: (812) 334-4273

January 12, 2009

Mr. Philip Marshall  
Indiana DNR, Division of Entomology and Plant Pathology  
402 West Washington Street, Room 290  
Indianapolis, Indiana 46204

Dear Mr. Marshall:

The U.S. Fish and Wildlife Service (FWS) has reviewed your letter of December 11, 2008 regarding the 2009 gypsy moth treatment program for 14 sites in 4 Indiana counties (Allen, Kosciusko, LaPorte and Whitley). We are submitting the following comments on the 2009 program.

These comments have been prepared under the authority of the Endangered Species Act of 1973, and are consistent with the intent of the National Environmental Policy Act of 1969.

The plan submitted in your letter includes aerial spraying of mating disruption pheromone flakes (Disrupt II) at 3 sites (68,262 acres total), aerial spraying of *Bacillus thuringiensis* biological control (Btk) at 10 sites (11,477 acres) and ground application of Dimilin at one small site, all with federal funding assistance.

#### Endangered butterflies

One of the proposed treatment methods, spraying with *Bacillus thuringiensis* (Bt), is of concern for 2 federally endangered species of Lepidoptera in Indiana, the Karner blue butterfly (*Lycaeides melissa samuelis*) and Mitchell's satyr butterfly (*Neonympha mitchelii*). The known occurrences of these 2 endangered species are in the northern portions of Lake and Porter Counties (Karner blue butterfly), and isolated locations in LaPorte and LaGrange Counties (Mitchell's satyr). The range of these species has not changed since our review of the 2008 gypsy moth program. Neither species is known to occur near any of the treatment sites identified in your letter. Treatment with Disrupt II pheromone flakes, which is considered to be highly specific for gypsy moths, is not known to have adverse impacts on the federally listed butterflies.

### Other Endangered Species

The proposed treatment sites are within the range of the federally endangered Indiana bat (*Myotis sodalis*) (entire state) and clubshell mussel (*Pleurobema clava*) (Kosciusko County), and the federally threatened copperbelly water snake (*Nerodia erythrogaster neglecta*) (Kosciusko County). In Kosciusko County the clubshell is found only in the Tippecanoe River and the copperbelly water snake records are from wetlands associated with natural lakes which are not near the treatment areas. Neither species is likely to be adversely affected by the proposed pheromone treatments.

Indiana bats hibernate in caves, then disperse to reproduce and forage in relatively undisturbed forested areas associated with water resources during spring and summer. Young are raised in nursery colony roosts in trees, typically near drainageways in undeveloped areas. Prior to hibernation, Indiana bats feed intensively in forested areas near hibernacula in order to build up adequate fat reserves to survive hibernation.

The diet of Indiana bats consists entirely of insects. Based on previous studies they appear to be somewhat opportunistic feeders. Some studies have found lepidopterans as a major dietary component, while others found a diet dominated by terrestrial Coleopterans or aquatic insects. Most of these studies were essentially "snapshots" and there is a lack of comprehensive, long-term research. It is possible that under some circumstances extensive elimination of a broad range of lepidopteran species over a large habitat area has the potential to adversely affect the food base of an Indiana bat nursery colony. This concern increases greatly with the use of Dimilin because it kills a much broader range of insects. None of the proposed treatment areas are near Indiana bat hibernacula, and there are no summer records of Indiana bats near any of the Btk or Dimilin sites. Most of the 2009 Btk aerial treatment sites are limited to relatively small areas of Indiana bat summer habitat, with the exception of the Lindenwood 09 Site in Allen County (an estimated 250 acre block of undisturbed forest) and the Beatty 09 site in LaPorte County (estimated 200 acres of forest).

The extent of the adverse effects of a loss of lepidopteran forage base on Indiana bats is uncertain, therefore at this time we consider the likelihood of take from the 2009 program to be discountably small. However, to minimize impacts on foraging Indiana bats we recommend that aerial spraying at those 2 sites listed be conducted as early as possible in the season. The Indiana bat summer occupancy season begins in early April, probably slightly later in northern Indiana.


The FWS concludes that the federally assisted 2009 gypsy moth program is not likely to adversely affect any of these federally listed species. If future programs incorporate large scale application of Dimilin, or propose BT aerial application over very large areas of Indiana bat summer or winter habitat, this issue will have to be reevaluated.

Some of the sites are within the range of the federal candidate eastern massasauga rattlesnake (*Sistrurus catenatus*) (Allen and Kosciusko Counties) and the rayed bean mussel (*Villosa fabalis*) (Allen County). Candidate species are not afforded protection under the Endangered Species Act, but these species may be proposed for listing in the future.

This precludes the need for further consultation on this project as required under Section 7 of the Endangered Species Act of 1973, as amended. If, however, new information on endangered species at the site becomes available or if project plans are changed significantly, please contact our office for further consultation.

For further discussion, please contact Mike Litwin at (812) 334-4261 ext. 205.

Sincerely yours,

  
Scott E. Pruitt  
Supervisor

cc: Christie Keifer, Indiana Division of Fish and Wildlife, Indianapolis, IN  
USFWS, Chesterton, IN

**THIS IS NOT A PERMIT**

**State of Indiana  
DEPARTMENT OF NATURAL RESOURCES  
Division of Water**

**Early Coordination/Environmental Assessment**

<b>DNR #:</b>	ER-13695	<b>Request Received:</b> December 12, 2008
<b>Requestor:</b>	Indiana Department of Natural Resources Philip T. Marshall Division of Entomology & Plant Pathology 402 W. Washington Street Rm W290 Indianapolis, IN 46204	
<b>Project:</b>	2009 Proposed Gypsy Moth Treatment Sites	
<b>County/Site info:</b>	Allen - Kosciusko - LaPorte - Whitley  The Indiana Department of Natural Resources has reviewed the above referenced project per your request. Our agency offers the following comments for your information and in accordance with the National Environmental Policy Act of 1969.	
<b>Regulatory Assessment:</b>	Formal approval by the Department of Natural Resources under the regulatory programs administered by the Division of Water is not required for this project.	
<b>Natural Heritage Database:</b>	<p>The Natural Heritage Program's data have been checked. The results of the Natural Heritage Data search for listed species and natural areas near the project sites is as follows:</p> <ul style="list-style-type: none"><li>- Arlington Park: Mengerson Nature Preserves</li><li>- Crescent: mussels in the river west of the site</li><li>- Lindenwood: Lindenwood Nature Preserve; and Kirtland's snake (<i>Clonophis kirtlandii</i>)</li><li>- Smith Field: upland sandpiper (<i>Bartramia longicauda</i>); and barn owl (<i>Tyto alba</i>)</li><li>- Lamie Road: state endangered mountain phlox (<i>Phlox ovata</i>); heart-leaved plantain (<i>Plantago cordata</i>); bog rosemary (<i>Andromeda glaucophylla</i>); four-toed salamander (<i>Hemidactylium scutatum</i>); and Richey Woods at southwest corner.</li><li>- Warsaw North: Indiana bat (<i>Myotis sodalis</i>); least weasel (<i>Mustela nivalis</i>); northern leopard frog (<i>Rana pipiens</i>); spotted turtle (<i>Clemmys guttata</i>); Blanding's turtle (<i>Emydoidea blandingii</i>); massasauga rattlesnake (<i>Sistrurus catenatus catenatus</i>); Kirtland's snake; 2 mussels; least bittern (<i>Ixobrychus exilis</i>); American bittern (<i>Botaurus lentiginosus</i>); Minute Duckweed (<i>Lemna perpusilla</i>); Fries' Pondweed (<i>Potamogeton friesii</i>); Redheadgrass (<i>Potamogeton richardsonii</i>); Whorled Water-milfoil (<i>Myriophyllum verticillatum</i>); Horned Pondweed (<i>Zannichelia palustris</i>); Small Purple-fringe Orchis (<i>Platanthera psychodes</i>); and Little Chapman Lake Nature Preserve just north of the site.</li><li>- Warsaw South: four-toed salamander; Swamp-pink (<i>Arethusa bulbosa</i>); Softleaf Sedge (<i>Carex disperma</i>); and bog rosemary.</li><li>- Beatty: Little Calumet Headwaters Nature Preserve is about 1/2 mile southeast of this site.</li></ul> <p>The following sites have no records of state listed species or natural areas near the project:</p> <ul style="list-style-type: none"><li>- Memorial Park, Papermill, St. Joe, Vance Avenue, Lofgren, and SR 39.</li></ul>	
<b>Fish &amp; Wildlife Comments:</b>	The devastating effects of uncontrolled gypsy moth infestations are well documented. Effects on non-target species are possible and care should be taken near areas that could possibly possess endangered or threatened species, or species of concern. The effects on target species will depend on a variety of factors and are impossible to predict with certainty. However, controlling the spread of this species is important to reduce the negative effects the caterpillars have on trees, particularly oaks. At this time, no harm to state or federal listed species resulting from the proposed control measures is known or anticipated. The potential harm from the project is less than the potential harm to these same species from an uncontrolled gypsy moth infestation.	



**THIS IS NOT A PERMIT**

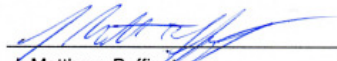
**State of Indiana  
DEPARTMENT OF NATURAL RESOURCES  
Division of Water**

**Early Coordination/Environmental Assessment**

**Contact Staff:**

Christie L. Stanifer, Environ. Coordinator, Fish & Wildlife

Our agency appreciates this opportunity to be of service. Please do not hesitate to contact the above staff member at (317) 232-4160 or 1-877-928-3755 (toll free) if we can be of further assistance.



J. Matthew Buffington  
Environmental Supervisor  
Division of Fish and Wildlife

**Date:** March 2, 2009

Division of Historic Preservation & Archaeology • 402 W. Washington Street, W274 • Indianapolis, IN 46204-2739  
Phone 317-232-1646 • Fax 317-232-0693 • [dhpa@dnr.IN.gov](mailto:dhpa@dnr.IN.gov)



December 16, 2008

Philip T. Marshall  
Managing State Entomologist and Forest Health Specialist  
Indiana Department of Natural Resources, Division of Entomology and Plant Pathology  
402 West Washington Street, Room W290  
Indianapolis, Indiana 46204

State Agency: Indiana Department of Natural Resources, Division of Entomology and Plant Pathology

Re: Project information concerning the gypsy moth treatment sites for 2009 (DHPA #5409)

Dear Mr. Marshall:

Pursuant to Indiana Code 14-21-1-18 the Indiana Department of Natural Resources, Division of Historic Preservation and Archaeology ("DHPA") has conducted a review of the materials dated December 11, 2008 and received by the DHPA on December 12, 2008, for the above indicated project in Allen, Kosciusko, LaPorte, and Whitley counties, Indiana.

Based on our analysis, we do not believe that any historic properties will be altered, demolished, or removed by the proposed project.

If you have any further questions regarding this determination, please contact the DHPA. Questions pertaining to this project should be directed to Karie Brudis at (317) 233-8941 or [kbrudis@dnr.IN.gov](mailto:kbrudis@dnr.IN.gov). Additionally, in all future correspondence regarding the above indicated project, please refer to DHPA #5409.

Very truly yours,

James A. Glass, PhD  
Director, Division of Historic Preservation & Archaeology

JAG:KAB:kab

## APPENDIX D. EXAMPLE OF PRODUCT LABELS

<div style="text-align: center;"> <p>Biological Insecticide</p> <h1>Foray® 76B</h1> <p>Flowable Concentrate</p> </div>		<p>1.0</p>	<div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center;"><b>FIRST AID</b></p> <table border="1"> <tr> <td style="width: 30%;"><b>If on skin or clothing</b></td> <td> <ul style="list-style-type: none"> <li>Take off contaminated clothing.</li> <li>Rinse skin immediately with plenty of water for 15-20 minutes.</li> <li>Call a poison control center or doctor for treatment advice.</li> </ul> </td> </tr> <tr> <td><b>If in eyes</b></td> <td> <ul style="list-style-type: none"> <li>Hold eye open and rinse slowly and gently with water for 15-20 minutes.</li> <li>Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.</li> <li>Call a poison control center or doctor for treatment advice.</li> </ul> </td> </tr> </table> <p style="text-align: center;"><b>HOT LINE NUMBER</b></p> <p>Have the product container with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-877-315-9819 for emergency medical treatment and/or transport emergency information. For all other information, call 1-800-323-9597.</p> </div>	<b>If on skin or clothing</b>	<ul style="list-style-type: none"> <li>Take off contaminated clothing.</li> <li>Rinse skin immediately with plenty of water for 15-20 minutes.</li> <li>Call a poison control center or doctor for treatment advice.</li> </ul>	<b>If in eyes</b>	<ul style="list-style-type: none"> <li>Hold eye open and rinse slowly and gently with water for 15-20 minutes.</li> <li>Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.</li> <li>Call a poison control center or doctor for treatment advice.</li> </ul>
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<b>If in eyes</b>	<ul style="list-style-type: none"> <li>Hold eye open and rinse slowly and gently with water for 15-20 minutes.</li> <li>Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.</li> <li>Call a poison control center or doctor for treatment advice.</li> </ul>						
<p style="text-align: center;"><b>For the control of Lepidopterous Larvae</b></p> <p><b>ACTIVE INGREDIENT:</b>  <i>Bacillus thuringiensis</i> subspecies <i>kurstaki</i>, strain ABTS-351, fermentation solids, spores, and insecticidal toxins ..... 18.44%  Other Ingredients: ..... 81.56%  Total: ..... 100.0%</p> <p>Potency: 16,700 Cabbage Looper Units (CLU)/mg of product (equivalent to 76 billion CLU/GAL.).  The percent active ingredient does not indicate product performance and potency measurements are not federally standardized.</p> <p>EPA Reg. No. 73049-49  EPA Est. No. 33762-IA-001</p>		<p>2.0</p>	<p><b>PRECAUTIONARY STATEMENTS</b></p>				
<p><b>INDEX:</b></p> <p>1.0 First Aid  2.0 Precautionary Statements  2.1 Hazards to Humans and Domestic Animals  2.2 Personal Protective Equipment (PPE)  2.3 Agricultural Use Requirements  2.4 Non-Agricultural Use Requirements  2.5 User Safety Recommendations  2.6 Environmental Hazards  3.0 Storage and Disposal  4.0 Directions for Use  5.0 Agricultural Use Requirements  6.0 Application  7.0 Mixing  8.0 Spray Volumes  9.0 General Agricultural Use Instructions  10.0 Table 1  11.0 Directions for Use for Non-Agricultural Applications  11.1 Non-Agricultural Use Requirements  11.2 Ground Application  11.3 Aerial Application  12.0 Table 2  13.0 Notice of Warranty</p>		<p>2.1</p>	<p><b>HAZARDS TO HUMANS AND DOMESTIC ANIMALS</b>  <b>CAUTION</b></p> <p>Harmful if absorbed through the skin. Causes moderate eye irritation. Avoid contact with skin, eyes, or clothing. Wash thoroughly with soap and water after handling. Remove and wash contaminated clothing before reuse.</p>				
<p>EPA Reg. No. 73049-49  EPA Est. No. 33762-IA-001</p>		<p>2.2</p>	<p><b>Personal Protective Equipment (PPE)</b></p> <p>Applicators and other handlers must wear:</p> <ul style="list-style-type: none"> <li>Long-sleeved shirt</li> <li>Long pants</li> <li>Waterproof gloves</li> <li>Shoes plus socks</li> </ul>				
<p>LIST NO. 60176</p>		<p>2.3</p>	<p><b>Agricultural Use Requirements:</b></p> <p>Mixers/loaders and applicators must wear a dust/mist filtering respirator meeting NIOSH standards of at least N-95, R-95, or P-95. Repeated exposure to high concentrations of microbial proteins can cause allergic reactions. When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.</p>				
<p><b>KEEP OUT OF REACH OF CHILDREN</b>  <b>CAUTION</b></p>		<p>2.4</p>	<p><b>Non-Agricultural Use Requirements:</b></p> <p>Mixer/loaders and applicators not in enclosed cabs or aircraft must wear a dust/mist filtering respirator meeting NIOSH standards of at least N-95, R-95, or P-95. Repeated exposure to high concentrations of microbial proteins can cause allergic sensitization.</p>				
		<p>2.5</p>	<div style="border: 1px solid black; padding: 5px;"> <p><b>User Safety Recommendations</b></p> <p>Users should:</p> <ul style="list-style-type: none"> <li>Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.</li> <li>Remove clothing immediately if pesticide gets inside. Wash thoroughly and put on clean clothing.</li> <li>Remove PPE immediately after handling the product. Wash outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.</li> </ul> </div>				

## 2.6 Environmental Hazards

For terrestrial agricultural uses, do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment washwaters.

This product must not be applied aerially within 1/4 mile of any habitats of endangered species or threatened lepidoptera. No manual application can be made within 300 feet of any threatened or endangered lepidoptera.

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

## 3.0 STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage or disposal of waste.

**Storage:** Store in a cool, dry place. Keep containers tightly closed when not in use. Store in temperatures above freezing and below 25° C (77° F).

**Pesticide Disposal:** Pesticide waste resulting from the use of this product may be disposed of on site or at an approved waste disposal facility in accordance with federal and local regulations.

**Container Disposal:** Triple rinse (or equivalent). Then offer for recycling or reconditioning or puncture and dispose of in a sanitary landfill or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

## 4.0 DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

Do not apply this product through any type of irrigation system.

For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

## 5.0 AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 4 hours.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is:

- Coveralls
- Waterproof gloves
- Shoes plus socks

## 6.0 APPLICATION

Foray 76B may be applied by ground or aerial equipment undiluted or with quantities of water sufficient to provide thorough coverage of plant parts to be protected. The amount of water needed per acre will depend upon crop size, weather, spray equipment, and local experience.

Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment- and weather-related factors determine the potential for spray drift. The applicator and the grower /treatment coordinator are responsible for considering all of these factors when making decisions.

## 7.0 MIXING

Shake or stir Foray 76B before use. Fill spray or mixing tank half full of water. Begin agitation and pour Foray 76B into water while maintaining continuous agitation. Add other spray material (if any) and balance of water. Agitate as necessary to maintain suspension. Do not allow diluted mixture to remain in the tank for more than 72 hours.

The use of a spreader-sticker approved for use on growing crops is recommended for hard to wet crops such as cole crops or to improve weather-fastness of the spray deposits. Combinations with commonly used spray tank adjuvants are generally not deleterious to Foray 76B, if the mix is used promptly. Before mixing in the spray tank, it is advisable to test physical compatibility by mixing all components in a small container in proportionate quantities.

## 8.0 SPRAY VOLUMES

**Ground Application:** Use recommended amount of Foray 76B in ground equipment with quantities of water sufficient to provide thorough coverage of plant parts to be protected. The amount of water needed per acre will depend upon crop size, weather conditions, spray equipment used and local experience.

**Aerial Application:** Use recommended amount of Foray 76B in aerial equipment undiluted or with quantities of water sufficient to provide thorough coverage of plant parts to be protected. In the western US 5-10 gallons per acre is the normal minimum; in the eastern regions a minimum of 2-3 gallons is normally used. The minimum amount of water needed per acre will depend upon crop size, weather conditions, spray equipment used and local experience.

## 9.0 GENERAL AGRICULTURAL USE INSTRUCTIONS

Foray 76B is a biological insecticide for the control of lepidopterous larvae. It contains the spores and endotoxin crystals of *Bacillus thuringiensis kurstaki*. Foray 76B must be ingested by the larvae to be effective. For consistent control, apply at first sign of newly hatched larvae (1st and 2nd instar larvae). Susceptible larvae that ingest Foray 76B cease feeding within a few hours and die within 2-5 days. Foray 76B may be applied up to and on the day of harvest. For maximum effectiveness the following is recommended: Monitor fields to detect early infestations.

Apply Foray 76B when eggs start hatching and larvae are small (early instars) and before significant crop damage occurs. Larvae must be actively feeding to be affected.



Repeat applications every 3 to 14 days to maintain control and protect new plant growth. Factors affecting spray interval include rate of plant growth, weather conditions, and reinfestations. Monitor populations of pests and beneficials to determine proper timing of applications.

Under conditions of heavy pest pressures or when large worms are present use the higher rate, shorten the application interval, and/or improve spray coverage to enhance control. When these conditions are present, a contact insecticide should be used to enhance control.

Thorough coverage is essential for optimum performance. Ground applicators equipped with directed drop nozzles can improve coverage.

10.0 Table 1.

Crop	Pets	Rate <sup>1</sup> (oz./acre)	Dosage <sup>1</sup> (BIU/acre)
Forests, Shade Trees, Ornamentals, Shrubs, Sugar Maple Trees, Ornamental Fruit, Nut & Citrus Trees <sup>2</sup>	Gypsy Moth	13.5 - 67.5	8 - 40
	Elm Spanworm		
	Spruce Budworm	13.5 - 50.5	8 - 30
	Browntail Moth		
	Douglas Fir		
	Tussock Moth		
	Coneworm		
	Buck Moth		
	Tussock Moth	10.0 - 27.0	6 - 16
	Pine Butterfly		
	Bagworm		
	Leafroller		
	Tortrix		
	Mimosa Webworm		
	Tent Caterpillar		
	Jackpine Budworm		
	Blackheaded Budworm		
	Saddled Prominent		
	Saddleback Caterpillar		
	Eastern & Western		
	Hemlock Looper		
	Orangestriped Oakworm		
	Satin Moth		
	Redhumped	7.0 - 13.5	4 - 8
	Caterpillar		
	Spring & Fall		
	Cankerworm		
	California Oakworm		
	Fall Webworm		

**Special Instructions**

<sup>1</sup>Use the higher recommended rates on advanced larval stages or under high density larval populations.

<sup>2</sup>In treating gypsy moth infested trees and shrubs in urban, rural, and semi-rural areas, exposure of non-target vegetation including, but not limited to, native and ornamental species and food or feed crops is permitted.

**11.0 DIRECTIONS FOR USE FOR NON-AGRICULTURAL APPLICATIONS**

**11.1 NON-AGRICULTURAL USE REQUIREMENTS**

The requirements in this box apply to uses that are NOT within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries or greenhouses.

Keep unprotected persons out of the treated areas until sprays have dried.

Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment- and weather-related factors determine the potential for spray drift. The applicator and the grower/treatment coordinator are responsible for considering all of these factors when making decisions.

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

Not for use on plants being grown for sale or other commercial use, or for commercial seed production, or for research purposes. For use on plants intended for aesthetic purposes or climatic modification and being grown in interior landscapes, ornamental gardens or parks, or on golf courses or lawns and grounds.

Not for use on trees being grown for sale or other commercial use, or for commercial seed production, or for the production of timber or wood products, or for research purposes except for wide-area public pest control programs sponsored by government entities, such as mosquito abatement, gypsy moth control, and Mediterranean fruit fly eradication.

Do not apply this product through any type of irrigation system.

Foray 76B contains the spores and endotoxin crystals of *Bacillus thuringiensis kurstaki*. Foray 76B is a stomach poison and is effective against lepidopterous larvae. After ingestion, larvae stop feeding within hours and die 2-5 days later. Maximum activity is exhibited against early instar larvae. Foray 76B may be used for both ground and aerial application. The product should be shaken or stirred before use. Add some water to the tank mix, pour the recommended amount of Foray 76B into the tank and then add the remaining amount of water to obtain the proper mix ratio. Agitate as necessary to maintain the suspension. The diluted mix should be used within 72 hours.

**11.2 Ground Application:**

Use an adequate amount of tank mix to obtain thorough coverage without excessive run off. Use the recommended per acre dosages of Foray 76B in up to the following amounts of water:

High volume hydraulic sprayers	100 gallons
Mist blowers	10 gallons

**11.3 Aerial Application:**

Foray 76B may be applied aerially, either alone or diluted with water at the dosages shown in the application rates table. Spray volumes of 28-128 ounces per acre are recommended. Best results are expected when Foray 76B is applied to dry foliage.

12.0 Table 2.

Crop	Pets	Rate <sup>1</sup> (oz./acre)	Dosage <sup>1</sup> (BIU/acre)
Forests, Shade Trees, Ornamentals, Shrubs, Sugar Maple Trees, Ornamental Fruit, Nut & Citrus Trees <sup>2</sup>	Gypsy Moth	13.5 - 67.5	8 - 40
	Elm Spanworm		
	Spruce Budworm	13.5 - 50.5	8 - 30
	Browntail Moth		
	Douglas Fir Tussock Moth		
	Coneworm		
	Buck Moth		
	Tussock Moth		
	Pine Butterfly	10.0 - 27.0	6 - 16
	Bagworm		
	Leafroller		
	Tortrix		
	Mimosa Webworm		
	Tent Caterpillar		
	Jackpine Budworm		
	Blackheaded Budworm		
	Saddled Prominent		
	Saddleback Caterpillar		
	Eastern & Western Hemlock Looper		
	Orangestriped Oakworm		
	Satin Moth		
	Redhumped		
	Caterpillar	7.0 - 13.5	4 - 8
	Spring & Fall		
	Cankerworm		
	California Oakworm		
	Fall Webworm		

**Special Instructions**

<sup>1</sup>Use the higher recommended rates on advanced larval stages or under high density larval populations.

<sup>2</sup>In treating gypsy moth infested trees and shrubs in urban, rural, and semi-rural areas, exposure of non-target vegetation including, but not limited to, native and ornamental species and food or feed crops is permitted.

## 13.0 NOTICE OF WARRANTY

Seller makes no warranty, express or implied, of merchantability, fitness or otherwise concerning the use of this product other than as indicated on the label. User assumes all risk of use, storage or handling not in strict accordance with accompanying directions.

*Foray* is a registered trademark of Valent BioSciences Corporation.

**HERCON®**  
**DISRUPT® II**  
**GYPSY MOTH MATING DISRUPTANT**

Population Suppressant

HERCON DISRUPT II® Gypsy Moth is a controlled-release pheromone formulation designed to lower incidence of gypsy moth, *Lymantria dispar*, mating by disrupting normal male flight orientation to females. This reduction in mating will help suppress the larval (caterpillar) population that causes damage by feeding on the leaves of hardwoods and evergreens.

**ACTIVE INGREDIENTS:**

(Z)-7,8-epoxy-2-methyloctadecane...	17.9 %*
OTHER INGREDIENTS .....	82.1 %
TOTAL .....	100.0 %

**CONTENTS:**

**MINIMUM NET WEIGHT:**      KG[      lb]\*

\* 8.5 kg [18.7 lb] of product will treat 50 acres at 30.4 g A.I./acre

**KEEP OUT OF REACH OF CHILDREN**

**C A U T I O N**

Read Directions and Precautionary Statements Before Use

**FIRST AID:**

**Have the product container or label with you when calling a poison control center or doctor or going for treatment**

**IF SWALLOWED:**

- Call a poison control center or doctor immediately for treatment advice.
- Have person sip a glass of water if able to swallow.
- Do not induce vomiting unless told to by a poison control center or doctor.
- Do not give anything to an unconscious person.

**IF IN EYES:**

- Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing.
- Call a poison control center or doctor immediately for treatment advice.

**IF ON SKIN:**

- Take off contaminated clothing.
- Rinse skin immediately with plenty of water for 15-20 minutes.
- Call a poison control center or doctor immediately for treatment advice.

**IF INHALED:**

- Move person to fresh air.
- If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible.
- Call a poison control center or doctor immediately for further treatment advice.

**Have the product container or label with you when calling a poison control center or doctor or going for treatment. You may also contact the National Pesticide Telecommunications Network at 1-800-858-7378 for emergency medical treatment information. Hours of operation are seven days a week 6:30 am to 4:30 pm PST.**

**PRECAUTIONARY STATEMENTS**

**Hazards to Humans and Domestic Animals**

**CAUTION:** Harmful if swallowed or absorbed through skin. Avoid contact with skin, eyes and mouth. Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco products or using the toilet. Applicators and other handlers must wear long-sleeved shirt and long pants, waterproof gloves and shoes plus socks.

**ENVIRONMENTAL HAZARDS:** For terrestrial uses: Do not apply directly to water or to areas where surface water is present nor to intertidal areas below the mean high water mark, except under forest canopy. Do not contaminate water when disposing of equipment washwaters or rinsate.

## HERCON® DISRUPT II GYPSY MOTH

### DIRECTIONS FOR USE

**It is a violation of Federal law to use this product in a manner inconsistent with its labeling.**

Apply this product up to two weeks before adult gypsy moth emergence. Depending on the gypsy moth population densities apply 30 gm (170 gm (6 oz) of product), 15 gm (85 gm (3 oz) of product) or 6 gm (34 gm (1.2 oz) of product) of active ingredient per application per acre. Apply 15 gm and 6 gm of active ingredient in low density gypsy moth populations. Consult your state or local authorities for determining gypsy moth population levels in your area. **To ensure proper rate and method of application, make application by or under the supervision of qualified a person.**

Apply a second application if adult gypsy moth emergence is extended or delayed, otherwise one application lasts the entire season. Use an inert sticker material with DISRUPT II to hold flakes on treated foliage or plant parts. The Hercon applicator is specifically designed to mix the proper amount of DISRUPT II flakes and inert sticker at the time of application. Use in areas such as forest; residential, municipal and shade tree area, recreational area such as campgrounds, golf courses, parks and parkways; ornamental, shade tree plantings; shelter belts and rights of way and other easements.

### STORAGE AND DISPOSAL:

Do not contaminate water, food, or feed by storage and disposal

**PESTICIDE STORAGE:** Store in sealed containers in a cool dry place.

**PESTICIDE DISPOSAL:** Waste resulting from this product may be discarded in an approved landfill.

**CONTAINER DISPOSAL:** Do not reuse empty bags. Place empty bags in trash

### WARRANTY AND DISCLAIMER STATEMENT

To the fullest extent permitted by law, Hercon Environmental warrants that this material conforms to the chemical description on the label. Manufacturer neither makes, nor authorizes any agent or representative to make any other warranty of fitness or of merchantability, guarantee or representation, expressed or implied concerning this material. Manufacturer's maximum liability for breach of this warranty shall not exceed the purchase price of this product. Buyer and user acknowledge and assume all risks and liabilities resulting from the handling, storage and use of this material not in conformance with the label.

Made in the USA by  
HERCON ENVIRONMENTAL  
Emigsville, PA 17318-0435

EPA Reg. No. 8730-55 EPA Est. No. 8730-PA-01  
Questions? Call 1-866-4-HERCON  
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Rev 10/06



## **APPENDIX E. GROUND TREATMENTS** (State Project, not part of Cooperative Project with USDA Forest Service)

### **Proposed Action**

The Indiana Department of Natural Resources (IDNR), Division of Entomology & Plant Pathology and Division of Forestry, proposes a state-funded project to treat two sites by ground treatment with Dimilin.

### **Project Objective**

The objective of the project is to eliminate reproducing gypsy moth populations from the proposed sites.

### **Need for Action**

The proposed sites contain a few host trees that contain a high number of gypsy moth egg masses. To achieve the objective to slow the spread of gypsy moth by eliminating reproducing populations, the IDNR-Division of Entomology & Plant Pathology desires to preserve urban and rural forested habitat from damage by gypsy moth and to protect areas not currently infested by gypsy moth. It was determined that ground treatment with Dimilin is the preferred action to take. Aerial treatments would not be effective in reducing the spread of gypsy moth from the proposed sites due to the small size of the target sites. The use of Dimilin by ground is the preferred treatment because it can be applied to trees with a high number of egg masses and with only one application, be effective in reducing populations. If no action is taken, gypsy moth will increase and spread and defoliation will occur sooner.

### **Affected Environment**

#### **Laporte County:**

**Lofgren Ground:** The proposed treatment site contains <1.0 acre. The site contains one large oak tree and large spruce trees on a rural residence. The site was detected in 2007 and was part of a Btk aerial treatment in 2008. Egg masses were detected in 2008. The survey indicates a low gypsy moth population and a state-funded project proposes to treat trees that have gypsy moth life stages with Dimilin by ground application.

**State Road 39:** The proposed treatment site contains <1.0 acre. The site contains Three large oak trees, five large cherry trees and one large clump cherry tree in a field and right of way area. The site was detected in 2008 and has had no prior treatment. Egg masses were detected in 2008. The survey indicates a low gypsy moth population and a state-funded project proposes to treat trees that have gypsy moth life stages with Dimilin by ground application.

## **Environmental Consequences**

The proposed ground treatment sites were evaluated for effects to nontarget organisms and human health and safety. “The U.S. Fish & Wildlife Service determined that the Dimilin treatment sites (which are not federal actions and are therefore not subject to Section 7 of the Endangered Species Act) are limited to very small areas with application limited to selected trees, and are not near any current endangered species occurrence records. Federally listed butterflies are not known to occur near either site.” Each landowner was personally visited to explain the treatment and to obtain written approval from the landowner to conduct the ground treatment.

Treatment: Dimilin



# 2009 Proposed Gypsy Moth Treatment Sites

LaPorte County

Block Name: Lofgren Ground

Ground Treatment

Treatment: Dimilin



# 2009 Proposed Gypsy Moth Treatment Sites

LaPorte County

Block Name: State Road 39

Ground Treatment

Treatment: Dimilin

